# SAFETY AND HEALTH IN ORGANIZED CAMPS

By

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# FOREWORD

The present study arose out of a dinner-meeting that was held at the Town Hall Club on February 19, 1929, for the purpose of discussing the problem of safety in camps. The meeting was called by Professor Fretwell of Columbia University, Mr. Braucher of the National Recreation Association and the writer of this Foreword. The organizations represented at this meeting were the American Red Cross, the Boy Scouts of America, the Camp Directors Association, the Camp Fire Girls, the Children's Welfare Federation, Columbia University, The Girl Scouts, Inc., The Jewish Welfare Board, the National Bureau of Casualty and Surety Underwriters, the National Conference of Catholic Charities, the National Health Council, the National Recreation Association, the National Safety Council, the New York Tuberculosis and Health Association, New York University, and the Young Women's Christian Association. The Young Men's Christian Association, the Boys' Club Federation and the Four H Clubs came into cooperation with the movement later.

It became apparent in the discussion that ensued that the subject of safety was of vital importance and interest to camp people. The minutes contain the following:

The outcome of the meeting was apparently a consensus on the following points:

1. That the development of safety is of fundamental importance in camping.
2. That safety in no way diminishes the adventure in camping and on the contrary that an accident kills adventure.
3. That while much has been done by individual organizations in the development of safety there is need for the pooling of efforts for the good of the camping movement in general.
4. That the time has come for the setting up of minimum standards covering all phases of camp administration having to do with health and safety.
5. That steps should be taken during the coming summer to make careful analyses of camp accidents in as many camps as will cooperate in the undertaking.
6. That the various camp organizations should continue their efforts to develop the safety field individually.
7. That the organizations represented be got together again at some nearby date to take definite steps looking toward the creation of a camp safety code.
8. That a bibliography on camp hygiene and safety be made available.

The first step in the follow-up was the preparation of a bibliography.* The second step was the setting up by the National Bureau of Casualty and Surety Underwriters of a graduate fellowship at Teachers College, Columbia University, for a study of camp safety and health and the appointment to this fellowship of Mr. J. Edward Sanders. The work was carried on during the academic year 1929-30.

The statistical study indicated facts of such importance and having such a fundamental bearing upon the right organization of camping that it seemed necessary to follow up the fellowship study with a further study. This consisted of a statistical research during a second camping season and a personal visitation by Mr. Sanders of some sixty camps.

Mr. Sanders' dissertation at Columbia University contains only the results of the first year's work and consists of Chapters I, II, IV, VI, VIII and IX of the present report. The second season's work is contained in Chapters III, V and VII.

It did not seem feasible to combine both season's work in a single unified report. There was, furthermore, a very real advantage in treating the second season's work as a check-up on the first season's work. This method, however, has had the disadvantage of producing considerable repetition. An attempt has been made in the conclusions of Chapters V and VII to present a summarized view of the whole situation.

It should be distinctly understood that this is a study that arose out of the camping organizations themselves. This was not only evident in the genesis of the undertaking as stated above, but in the cooperation that was received from the camps and camping organizations in the collection and furnishing of statistical material. In fact the study was made possible only through the enthusiastic and painstaking cooperation of the camps themselves. I am glad of the opportunity to acknowledge this and to express the appreciation of the steering committee to the camps and camping organizations for their sustained interest and help.

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* A Bibliography of Camp Safety Hygiene and Sanitation. Education Division, National Safety Council, 1 Park Avenue, New York City.

## ACKNOWLEDGMENT

To express appreciation to all persons whose assistance has made this study possible would require many pages. Even so the assistance given by a few of the many has been so great that it would be unfair not to mention them.

The writer is indebted: First of all, to the hundreds of camp directors and camp health officers whose interest in the camping movement is great enough to have caused them to take time from their busy schedules to keep the detailed records upon which the study is based.

Second, to the various national officers of the camping organizations. Without their interest and continued cooperation the study would not have been possible.

Third, to the Chairman of his Committee at Teachers College, Columbia University, Professor Elbert K. Fretwell, and to Professor Percival M. Symonds and Professor Jesse F. Williams, the members of the Committee. Without the continuous guidance of Professor Fretwell in particular it would not have been carried through.

Fourth, to the National Bureau of Casualty and Surety Underwriters to whom the carrying on of the study is due. Even deeper thanks are due Mr. Albert W. Whitney, its Associate General Manager, to whom the writer in particular and the safety education movement in general are equally indebted. Dr. H. J. Stack of the National Bureau, Miss Idabelle Stevenson and Miss Florence Nelson of the National Safety Council have given ably and generously of their time and assistance. For all these the writer is grateful.

J. E. S.

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# CHAPTER I

## INTRODUCTION

Camping in its best sense, is an adventure, and as such it was begun. The time of its beginning cannot be told unless we limit very rigidly the definition we apply to camping, and the beginnings even of what we know as the permanent, organized summer camps, are hidden in considerable obscurity. There were, probably, a few camps similar to our present ones by 1880 though none of them are operating today. Camp Dudley, founded by Sumner F. Dudley in 1885 on Lake Champlain, is the oldest organized camp in existence. Sargent[1] lists 22 camps known to have been in existence before 1900, and though there doubtless were others it is, nevertheless, quite obvious that the camping movement, as such, has developed since that date.

Begun as an adventure, both by groups and individuals, camping very early came to have other very definite purposes. Balch, who organized Camp Chocurua in 1881, wrote as follows: "I first thought of the organized camp as an institution in 1880. The miserable conditions of boys belonging to well-to-do families in summer hotels, considered from the point of view of their right development, set me looking for a substitute."[2] At this very early date camps were establishing health and educational objectives. A short time later such people as the Gulicks, Ernest Thompson Seton and others began building camps with the definite purpose of offering in the vacation period those things which modern urban civilization was making it so difficult for children to find: romance and adventure, recreation and health, both physical and spiritual.

As the years passed the conditions which gave rise to the need for organized camps became more aggravated. Cities grew larger, school days lengthened, vacations were made shorter, play-areas were made smaller—and organized camps multiplied many fold. This quite amazing growth has been accompanied by characteristics so striking and so fundamental to any study of health and safety in camps that they should be mentioned briefly.

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[1] *A Handbook of Summer Camps*—6th Edition 1929, Porter Sargent, pp. 24.

[2] *Camps and Camping 1929*, pp. 38, American Sports Publishing Co.

## THE GROWTH OF THE CAMPING MOVEMENT

The first characteristic of the growth of camping is that as camping has grown the camp population itself has changed steadily. In the first place campers today are probably younger. The mean age for the 65,000 campers for whom this information could be secured in 1930 was twelve years, eight months. It is unlikely that the early campers were so young. There are many camps today where children as young as six years, and even younger, are admitted. Certainly this was not true in the earlier camps. Another characteristic of the changing population has grown out of the fact that most camps are no longer places for "roughing it." Many of them boast of complete electric light systems; shower baths and infirmaries are common-place; not only are there doctors and chefs but nurses and waiters as well. This change may be either a cause or an effect but in any event the result is that camps are filled not only with the strong who come for a strenuous life, but also with the lame and the blind, the cardiac and the convalescent, the over-pampered and the badly spoiled.

The second characteristic which should be mentioned is that new motives have entered into the operation of camps. Whatever else it may be, camping is now a business, quite "big business," and the profit motive has played a not insignificant role in the growth of camping. This new motive has resulted in much of the finest development of the movement but it has been far from an unmixed blessing. Camp directing has become one of the most difficult and complicated vocations and there are unquestionably many persons operating camps today for commercial purposes, primarily, who are quite unfitted, either by training or temperament, to do so. This new factor brings with it problems which make all the more necessary the development of standards to cover some of the more fundamental aspects of camping.

A third characteristic of growth is that camps have increased in size and in duration until many of them are now small, semi-permanent villages. With this development come many problems bearing on the health of campers. As camps grow larger the disposal of sewage and garbage becomes difficult, the control of contagious and infectious diseases becomes a serious problem, and in addition the difficulty of securing adequate supplies of milk, water and vegetables often increases. The increased duration of camps introduces new problems; campers may lose sleep for one

or two nights without endangering their health, or indulge in picnic meals for a day without too serious consequences, but if this procedure be continued over weeks and months it becomes very serious. These factors, too, point towards the need for adequate standards to assure the desired health and safety of campers.

It should be mentioned, also, that society has learned that health and safety are social as well as individual problems, and that group standards are necessary if individuals are to be protected. This is particularly true in the field of child health and safety and the development of standards for camps is only a part, but an increasingly necessary part, of the larger movement.

A fourth factor leading toward the development of standards also grows out of the number who camp. Camping, as a movement, has become so large that it is now a decided factor in public health and safety. The report of the Sub-committee on Summer Vacation Activities of the School Child of the White House Conference on Child Health and Protection states that there are 7,367 organized children's camps in the country attended by 1,062,500 persons annually. The table below gives the details concerning these figures. These camps are located in all sections of the coun-

TABLE I

THE NUMBER OF ORGANIZED CAMPS FOR CHILDREN IN THE UNITED STATES

| Organization | No. of Camps | No. of Children |
|---|---|---|
| Private Camps | 2,100 | 100,000 |
| *Boy Scout Camps | 650 | 300,000 |
| *Girl Scout Camps | 423 | 46,000 |
| *Camp Fire Girls | 128 | 85,000 |
| Other National Organizations | 50 | 2,500 |
| Fraternal orders, welfare organizations, church and institutional camps | 500 | 150,000 |
| *Y. M. C. A. (ages as high as 22) | 540 | 90,000 |
| *Y. W. C. A. (ages as high as 22) (Girl Reserves) | 217 | 40,000 |
| Specialty and Disability Camps | 300 | 35,000 |
| *4 H Camps (Dept. of Agriculture) | 2,560 | 214,000 |
| | 7,368 | 1,062,500 |

* Official figures.

Sub-committee on Summer Vacation Activities of the School Child. Preliminary Report—Section III C. VI-28. 1929. White House Conference on Child Health and Protection.

try but are far from uniformly distributed. The result is a congestion of camps in a few districts and in these sections the influence of camping on public health is very great indeed. In 1929 an epidemic of typhoid fever in one camp resulted in the closing of it and the consequent distribution of typhoid patients into at least three states.

From even so brief a discussion of the changing character of camping it is evident that this activity, begun by a few individuals in search of adventure and recreation, has come to be a far-reaching movement which affects our entire society. Today we have outdoor athletic clubs, convalescent homes, country hotels, all calling themselves camps, and the end of the camping development is not yet in sight. It may be that camping is in its merest infancy; for a society which can afford to send every one through twelve years of formal education for ten months each year and which is still extending its free and compulsory formal education both downward and upward, may reach the stage where it also sees the wisdom of providing for its children a few days of education, for a few years at least, which is not so formal.

## PRESENT PRACTICES OF HEALTH AND SAFETY SUPERVISION

Various types of regulation of health and safety practices have been tried and are now in force. The regulation has been of two kinds. First, there has been regulation from within which has come from the various large organizations which conduct camps for children, the Boy Scouts, the Girl Scouts, the Young Men's Christian Association, to mention only three of the larger organizations. Each of the major organizations has developed standards and practices out of its own experience and attempts to secure the adoption of them within its own group of camps. Some of them, as the Boy Scouts, have a form of organization sufficiently centralized so that considerable pressure can be brought to bear upon individual camps—and at the other extreme perhaps is the Young Women's Christian Association which only makes suggestions to its camps. Most of the organizations have some system of inspecting camps and many have various types of rating schemes. Another type of regulation has come through the work of the American Red Cross, for example, which as an outside organization makes available its detailed knowledge of the supervision of aquatic activities to any camps that desire it. Others of this type might be mentioned.

There is a second type of supervision which is growing steadily, that exercised by the various State Boards of Health. Many states have regulations designed to cover summer camps and a few states have well developed systems of inspection, rating and supervision. At present, however, it would seem a conservative statement to say that, with a few exceptions, state supervision and control of health and safety in organized camps is in a decidedly embryonic stage, quite inadequate to cope with the really complex problems which are found in camping districts. This is discussed in greater detail in Chapter IX.

## RESUMÉ OF PREVIOUS STUDIES

The chief studies made have been carried on largely by the organizations, which conducted them primarily for their own camps, or by such organizations as the American Red Cross. They have dealt to a very large extent with two types of problems; first, those having to do with the selection of sites, mechanical equipment, sewage and garbage disposal, water supply and the like; second, those having to do with the supervision of aquatics, in which the Red Cross has taken the lead. While there have been various books and articles dealing with the supervision of other phases of camping they have, on the whole, not been developed by the methods of scientific research.

Two of the outstanding books touching upon the general problems of camp administration are Weir's "Camping Out"[1] and Gibson's "Camp Management".[2] The first book was edited by Mr. H. L. Weir for the Playground and Recreation Association after he had visited camps in various sections of the country. Mr. Weir wrote sections of the books and edited other chapters which were written by recognized leaders in the various fields. It is written almost entirely from the viewpoint of the Camp Administrator rather than the Camp Program Director and undoubtedly was representative of the views of a majority of the leaders in the camp field at the time it was written. The second book has been developed solely out of the experience of Mr. Gibson himself, most of it at the camp of which he was Director for a great many years. It deals

[1] H. L. Weir: "Camping Out". McMillan: 1924: pp. 636.

[2] H. W. Gibson: "Camp Management": Association Press: 1931. [In press.]

more with the activities which go to make up the routine of the life of a camp. It was published in 1923 but has been revised and reissued.

In 1928 Mr. L. L. McDonald edited for the Boy Scouts the volume "Camp Sanitation",[1] a very complete and detailed treatise bearing on that specific problem. The material in it is almost entirely secondary in nature, being based on the work of various sanitary engineers. It is a compilation which seems to be very well adapted to the needs of Camp Directors and represents as objective data as are available from the work of Sanitary Engineers.

In the field of the supervision of aquatics the American Red Cross has made or sponsored most of the studies, as mentioned above. The most recent is a "Water Program for Camps", by Thomas Cureton in cooperation with the Red Cross, published in 1929.[2] "Swimming and Water Safety" (1927)[3] by the Boy Scouts, and "The Book of Aquatics" (1925)[4] by the Camp Fire Girls and the Red Cross are two books which are also very good. There have been other publications, perhaps equally as good as the three mentioned, but they, at least, are representatives of the best material available.

One other study should be mentioned briefly. In 1917 Entz and Howe made a questionnaire study of fifty-three "Large Girls Camps" in New England.[5] Some information was secured about milk and water supplies, sanitary equipment, site, size and similar items. There was no information about accidents but a question was asked concerning health conditions. There is so little objectivity about the study that there seems to be no point in attempting to compare results of this study with the present one with reference to health conditions.

The Boy Scouts request the camps of their group to keep records of all the more serious illnesses and accidents, particularly of fatalities should any occur. This represents probably the only

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[1] L. L. McDonald: "Camp Sanitation": Boy Scouts of America: 1928: pp. 196.

[2] T. K. Cureton: "A Water Program for Summer Camps": Blakistons: 1929: pp. 162.

[3] F. C. Mills: "Swimming and Water Safety": Boy Scouts of America: 1927: pp. 185.

[4] "Book of Aquatics": Campfire Outfitting Company: 1925: pp. 63.

[5] Entz, R. & Howe, E. C. "Hygiene and Sanitation of Summer Camps". *American Physical Education Review* 1918-23: 232-7, 293-300, 434-8, 488-93.

data of the sort that have been gathered from any large group of camps distributed over a considerable area. Since the data are drawn from only one group of camps it might not be at all representative of conditions among other groups so that it did not seem desirable to use this material.

## THE PROBLEM

The first step in the present study was to get an accurate record of the accident injuries and the illnesses which occur in representative camps, together with the related information that would seem to point the way towards improving conditions. Since there were no similar studies, the first step was to determine the information desired and work out the necessary report blanks. The second step was to get a representative group of camps to keep and return the records. The third step was to analyze the reports to discover the factors related to illnesses and accidents in camps. The fourth step was to formulate the general findings into a code covering health and safety in camps, the code to be so devised as to take cognizance of the administrative difficulties connected with the putting of it into practice. This last would involve a detailed study of the present legislation to determine what would constitute the best division of responsibility between state and organization authorities. This study would therefore, include a digest of legislation in force. To summarize, the problem is then:

1. To discover present safety and health conditions, both as to accidents and illnesses and also as to the related factors.
2. From the above to work out methods and measures for improving the conditions.
3. To formulate these measures into a code covering health and safety in camps.

# CHAPTER II

## THE PLAN OF THE STUDY—1929

### THE DATA TO BE GATHERED

The first part of the problem as stated was to discover present safety and health conditions in organized camps. The best objective index to these conditions is the number and kind of accidents and illnesses occurring. Since these data were not available for any large cross-section of camps the first problem was to secure this. If a representative picture of conditions in the camping movement generally was to be secured it would be necessary to secure reports from all kinds of camps and from the various sections of the country. The Directors of Camping, or the persons serving in that capacity, for the larger national camping organizations were invited to come together to discuss the data desired, the number of camps needed in order to secure an adequate sampling, and the methods by which the cooperation of the needed camps might be secured.

As a result of this meeting the decision was reached that a minimum of 100 camps would be needed and that the greatest emphasis should be placed on the accuracy rather than the number of the records to be secured. Each organization agreed to select the desired number of camps from among its own group, inviting only those whose managements seemed from past experience to be capable of keeping with the necessary care the records needed. In each case this group probably represented the more professionally minded and better trained directors of the organization. The table giving the number and kind of camps participating and the number of individuals included is given below.

Reports were tabulated from 114 camps and in addition forty-nine others sent more reports of one kind or another which were so obviously incomplete that they were not tabulated. 134 camps returned the general closing report, a copy of which is given later.

It was estimated in the beginning that the 100 camps thus selected would represent a total camp population of perhaps 30,000 individuals averaging somewhere between two and four weeks in camp each. Only the crudest sort of an estimate could be made as to the probable number of accidents and illnesses to be expected

TABLE II

THE CAMPS STUDIED—1929

| Organization | Camps | Individuals | Board Weeks |
|---|---|---|---|
| Boys Club Federation | 7 | 3,966 | 9,154 |
| Boy Scouts of America | 20 | 5,794 | 10,626 |
| Camp Directors Association | 32 | 4,399 | 25,324 |
| Camp Fire Girls | 8 | 3,925 | 9,088 |
| Children's Welfare Association | 10 | 3,024 | 10,167 |
| Girl Scouts, Incorporated | 8 | 1,993 | 6,239 |
| Jewish Welfare Board | 3 | 4,117 | 9,130 |
| National Recreation Association | 6 | 2,861 | 6,909 |
| Young Men's Christian Association | 12 | 2,365 | 10,923 |
| Young Women's Christian Association | 8 | 4,948 | 8,080 |
| | 114 | 37,392 | 105,640 |

| | | |
|---|---|---|
| Number of Board Weeks: | Male | 57,656 |
| | Female | 47,984 |
| | Total | 105,640 |
| | Campers | 87,938 |
| | Staff Members | 17,702 |
| | Total | 105,640 |

in such a group but a total of 10,000 was suggested by those most familiar with industrial health and safety work.

It is quite obvious that the camps were not random selections, as those invited represented a highly selected list in the opinion of the people inviting them. Camps not connected with any camping organization were not invited for the reason that there was no available channel through which they could be secured. All reports were made by code number only with the identity of the reporting camp known only to the writer. It was stressed from the beginning that no comparisons between individual camps were to be made, so that as far as can be determined full and complete records were kept and returned.

Once again, it should be repeated, these camps represent the top level of camping as judged by general camping standards. One evidence of this is the ratio of staff members to campers in the group. Camper board weeks totalled 88,000, staff board weeks 18,000, a ratio of 4.9 to 1 which is probably a higher proportion

of staff members than would be true for the camping movement generally. Obviously, then conditions in this group of camps might not be representative of conditions generally. The possible influences of the sampling will be taken up in detail in connection with the conclusions drawn. The justification for using such a sampling for a study of this kind is that it was necessary to use it. It did not seem reasonable to assume that those camps which managed their own affairs poorly would be capable of keeping the very detailed records for an outside organization that this study required. If the study is to have value accurate records of the factors related to the accidents and illnesses reported are a necessity and it seemed better to attempt to secure these kinds of records from well administered camps than to get records of doubtful accuracy from a more randomly selected group. It is evident that extreme care must be exercised in making predictions concerning camping as a whole from the data here assembled. It is assumed then that the cooperating camps are representative of what people familiar with the camping movement would consider the upper level of camps. No more is claimed for the sampling than this.

## REPORT BLANKS USED

It was necessary first to define illness and accident. The interpretation used in industrial health and safety work was modified so that for our purpose illnesses and accidental injuries were defined as those as a result of which the camper or staff member was definitely prevented from participation in the activities of the camp. This might be complete disability which prevented participation in the camp activities, or it might be only partial disability, in which the individual might carry on everything except athletic and aquatic activities, for example. Minor cuts or scratches or indispositions which did not specifically keep the individual from activities were not reported. The use of the term accidental injury raises the distinction between an accident and an injury. The accident is the mishap as a result of which physical injury may or may not occur. To illustrate, a fractured arm is not an accident. It may result from a fall which would be an accident, but the fracture is an injury. In the study we were interested, first of all, in those accidents only from which injuries resulted,

and in addition we were interested both in the accident and also in the injury resulting from it.

Since there was litle precedent for this type of study it seemed desirable to request all the information concerning each illness and accident that might have some bearing on the development of remedial measures. Individual report blanks seemed necessary and the following blanks were worked out.

FIGURE 1

FORM A

(BEFORE FILLING OUT BLANK PLEASE READ DIRECTIONS)

CAMP ACCIDENT REPORT

I. THE ACCIDENT

Code No._____

Report No._____

1. Nature of injury_____ 2. Date of accident_____

3. Class of accident_____ 4. Time of accident A.M. _____ P.M. _____

It happened 5. in Camp_____
(*Specify Location*)

6. Away from camp_____
(*Specify Location*)

II. THE INDIVIDUAL

7. Age of individual_____ 8. Sex Male _____ Female_____ 9. Position {Staff_____ Camper_____ Visitor_____

10. Was individual normal? Yes_____ No_____ 11. If not, specify abnormal condition

_____

12. Physical condition at time of accident: Excellent___Average___Poor____

13. If poor condition, state details_____

14. Previous camp experience_____

15. If previous reports made on this individual give numbers_____

(*To be forwarded to the Education Division, National Safety Council, One Park Avenue, N. Y. C.)*

III. HOW ACCIDENT HAPPENED

16. What was individual doing?_____

17. What happened? _____

_____

18. Why did it happen?_____

_____

19. How could such accidents be prevented in the future?_____

_____

_____

IV. RESULTS OF ACCIDENT

(*Please read Directions before answering*)

20. Permanent disability, nature_____

21. Temporary total disability, nature_____Days_____

22. Temporary partial incapacity, nature_____Days_____

23. Reporter's Initials_____

FIGURE 2

FORM B

(BEFORE FILLING OUT BLANK PLEASE READ DIRECTIONS)

CAMP ILLNESS REPORT

I. THE ILLNESS

Code No._____

Report No._____

1. Nature of illness_____ 2. Date contracted_____

II. THE INDIVIDUAL

3. Age of individual___ 4. Sex Male_____ Female_____ 5. Position {Staff_____ Camper_____ Visitor_____

6. Was individual normal? Yes_____ No_____. 7. If not, specify abnormal condition

_____

8. Previous physical condition: Excellent_____Average_____Poor_____

9. If poor condition, state details_____

10. How long in camp preceding illness_____

11. If previous report made on this individual give report numbers_____

III. RESULTS OF ILLNESS

12. Period confined to bed, Days__13. Period of partial incapacity. Nature__
_____ Days_____
After effects—14. Temporary_____
15. Permanent or semi-permanent_____

*(To be forwarded to the Education Division, National Safety Council, One Park Avenue, N. Y. C.)*

IV. CAUSES AND HISTORY

16. Give details of causes and history of illness_____
_____
_____
_____
_____
_____
17. If conditions arose outside of camp, state details_____
_____
_____
18. What future preventive measures do you suggest?_____
_____
_____
_____
_____
_____
_____
19. Reporter's Initials_____

The request was made to the individual Camp Directors, by personal letter, that if a resident medical officer were employed he be made responsible for making the reports. Also it was requested that some other person, preferably the Director, check the records carefully before they were mailed to insure that every report be clear and complete. While this was not done in many cases, nevertheless, almost all the reports gave very clearly the major items of information desired.

In addition to the detailed report on each accident and illness other items of information concerning the supervision and administration of the camp were needed. Accordingly the following closing report was worked out and on August 20 a copy was mailed to all camps which had agreed to cooperate, even though at that time some of them had sent no reports. One item, a copy of the menu for one week, was specifically optional. Copies of the boating and canoeing regulations, the medical examination and record cards of the camp, and copies of the daily program were also requested.

FIGURE 3

FORM F

CAMP ACCIDENT AND ILLNESS STUDY

Date_____

Final Report

I

Camp Code Number_____ Address_____
Length of Season_____ Total Number Campers_____ Total Number Staff_____
Total Board Weeks: Campers_____ Staff_____

Camp Management

II

Camp Director: Age_____ Previous Experience_____
Education_____
Associate Director: Age_____ Previous Experience_____
Education_____

Health Program

III

Supervised by Resident: Physician_____ Other (Specify)_____
Medical Student_____
Pre-Camp Medical Examination: Yes_____ By Whom_____
No_____ When_____
When is First Examination in camp given_____
How often is each camper examined_____
Do you have a: First Aid Station Yes_____ Infirmary Yes_____
How many beds_____ No_____ No_____
How much sleep do the campers average daily_____
How much additional scheduled rest_____

Aquatic Program

IV

Directed by a Red Cross Examiner or the Equivalent Yes_____ No_____
Life Saver Yes_____ No_____
Other (Specify)_____
Length of Swims: Dip_____ Morning_____ Afternoon_____
Do you use a Buddy system_____ Check in and out system_____
Other (Specify)_____
Was there an examination of water taken from swimming area Yes_____
No_____ By whom_____
When_____ Results_____
Boating Equipment: Wooden Boats: Number_____ Metal Boats_____
Motor Boats_____ Canoes_____

Activity Programs

V

Estimated Number who hike per week_____ Average distance_____
Estimated Number who ride per week_____ Average time_____
Do you have competitive athletic leagues Yes_____ No_____
Estimated Number campers participating daily_____
Are special provisions made to prevent overstrain and exertion Yes_____
No _____
If yes, what provisions_____
_____
_____

Food

VI

Is kitchen staff subjected to medical examination Yes_____ No_____
By whom_____ When_____
Is the milk pasteurized Yes_____ No_____ Examined Yes_____
No_____ By whom_____
Do you have adequate refrigeration Yes_____ No_____
Who is responsible for the supervision of preparation and service of food _____
Are dishes scalded or sterilized after each meal Yes_____ No_____
Can campers purchase candy or sweets Yes_____ No_____
Under what restrictions_____

Water Supply

VII

Source—Well_____ Spring_____ Inspected by_____
When_____ Results_____
Other (Specify)_____
Do you have a bubbler system for drinking water Yes_____ No_____

Sanitation

Type of Latrines: Pit_____ Chemical_____ Flush Toilet_____ Other_____
Garbage: Burned_____ Buried_____ Carried away_____ Other_____

VIII

Sanitation system inspected by whom_____
When_____
Results of Recommendations_____
_____

Wash House facilities: Showers Yes___ No___ Basins Yes___ No___ Tooth Washing Basins Yes___ No___

Describe briefly any special accident hazards arising from nature of the camp location_____

_____

_____

_____

IX

If convenient please send copies of:

Boating and Swimming Regulations
Daily Program Schedule
Medical Examination and Record Cards
One Week's menus. (Optional)

Reporter's Initials_____

The plan then was to analyze the data thus collected with the purpose of:

1. Locating the chief illness and accident hazards.
2. Discovering the influence of such related factors as age, status in camp, previous camp experience and the like which might have a bearing on remedial measures.

## FORMULATION OF A HEALTH AND SAFETY CODE

Since the purpose of the study is to find ways to improve health and safety conditions in camps as well as to discover what these conditions are, there is the dual problem of finding not only what needs to be done, but also the best ways of achieving the desired changes. It was evident quite early in the study that a summary of the findings might be drawn up in the form of a tentative code of standards covering minimum requirements on basic points and that the development of such a code would be the first step in the improvement of conditions. To develop a code which might really have some influence it would be necessary to analyze present methods of camp supervision and control and if possible to secure some evaluation of the success of present methods. Although many states have Board of Health regulations bearing on camp safety, health and sanitation there was no adequate digest of them. The first step, then, in this connection, was to make a comprehensive digest of the regulations now in force. From this

it would be hoped that some light might be had as to the form the code should take.

After the above had been completed a tentative code could be formulated, based on conditions as disclosed by the study. Something of the methods followed by the American Standards Association in the development of its codes might be used. This, briefly, would consist in calling together representatives of the groups involved, which, in this case, would be the organizations and individuals who conduct camps and the State Health Officers, and to combine into a tentative code of standards those points on which consensus of agreement could be reached. The National Safety Council has been actively interested so that representatives of it and other interested professional organizations and societies would also be invited. In this form the code would be purely voluntary, quite tentative, so that representatives of the various organizations would not be definitely obligating the organizations sending them. The development of official codes to be met by all camps would obviously be a much later development than the present study.

# CHAPTER III

## THE EXTENSION OF THE STUDY—1930

During 1929 the study, as outlined in the preceding chapter, was carried out and the analyses of the data made, as hereinafter reported. The data relating to safety conditions and problems had a high degree of statistical reliability, as far as could be determined, and quite reliable and satisfactory answers were given to the major problems which had been foreseen.

This was not altogether true in the field of health. It is true, rather, that satisfactory data were secured concerning those problems which had been foreseen but the most serious problem uncovered was one which had not been anticipated. Stated briefly, the data indicated that the longer children remained in camp the more likely they were to become ill. Furthermore, this was still found to be true when any possible influence of season was eliminated. When treated statistically the differences in illness rates on which this conclusion was based were found to have a high degree of reliability.

The implications of this finding are evident for if it is actually true it constitutes a most fundamental criticism of present camping. The data available indicated that the difficulty seemed to be arising, in part at least, from prevalent practices relating to the control of contagious diseases, nutrition, sleep, fatigue and worry. In view of the importance of the implications of the finding it seemed highly desirable and in fact necessary to continue the study over a second year, and the decision to do this was reached. Particular emphasis was to be placed upon a study of those conditions in camps which might be influencing the health of campers.

The experience of the first year suggested three ways in which the study might be improved. First, the study during the first year was of sufficient scope to give a high degree of reliability to the major findings but, even so, more camps would give an even higher reliability. Therefore a larger and more randomly chosen group of camps was invited to participate in the study in 1930. The extent of the increase in the size of the group studied is discussed later.

Second, using the data from the first year it was possible to devise a much improved and refined system of reporting accident and illness facts. A weekly report form was worked out in which

each illness and accident could be reported on a self-coding, check list type of report blank. This required only a fraction of the time required by the individual descriptive report previously used and, equally important, prevented any possible misunderstanding of the reports made. Copies of the report forms used are given later.

Third, the first year of the study pointed out the desirability of securing first hand observation of practices in a considerable number of the cooperating camps. Accordingly the writer spent the entire season of 1930 visiting camps. The plan, as far as it was possible, was to spend a full twenty-four hours in each camp so that the full day's program might be observed. A brief sanitary or safety survey of a camp can be made comparatively rapidly but if the operation of the entire camp program is to be seen adequate time must be allowed for it. No advance notice of visits was given so that no formal or especially prepared programs were seen other than those included in the routine of camp life. After observing the preparation that may be made for visitors this point seems highly important to the writer.

As in the preceding year it was stressed from the beginning that the identity of individual camps was to be concealed, even from the organizations to which they belonged. Furthermore it was agreed from the beginning that conditions in specific groups of camps, or organizations, would not be discussed. This fact plus the whole hearted and ceaseless cooperation of the various national staff members of the cooperating organizations resulted in a degree of completeness in the reporting which could hardly be equalled.

## THE CAMPS STUDIED—1930

The following table shows the enlarged scope of the study in 1930. It will be evident at once that, in view of the reliability secured from a much smaller group of camps in 1929, the findings for 1930 should be very reliable indeed, insofar as numbers influence reliability. The study was based on a total camp weeks of 266,265 as compared to 105,640 in 1929, and of 503 camps in 1930 as compared to 114 in 1929.

TABLE III

THE CAMPS STUDIED—1930

| Organization | Total No. of Camps Actually Cooperated | Total No. of Different Persons in Camp | Total No. of Camp Weeks | Average No. of Weeks in Camp per Person |
|---|---|---|---|---|
| Boys Club Federation | 6 | 2,168 | 2,873 | 1.3 |
| Boy Scouts of America | 143 | 38,580 | 60,720 | 1.6 |
| Camp Directors Association | 63 | 8,388 | 43,918 | 5.2 |
| Camp Fire Girls | 46 | 7,503 | 17,248 | 2.3 |
| Children's Welfare Association | 14 | 7,283 | 16,316 | 2.2 |
| Girl Scouts, Incorporated | 52 | 11,004 | 23,869 | 2.2 |
| Jewish Welfare Board | 9 | 2,873 | 7,636 | 2.7 |
| National Recreation Association | 8 | 7,146 | 7,329 | 1.0 |
| Young Men's Christian Association | 107 | 25,069 | 58,573 | 2.3 |
| Young Women's Christian Association | 41 | 12,399 | 20,603 | 1.7 |
| State Extension Camps | 14 | 6,376 | 7,180 | 1.1 |
| | 503 | 128,789 | 266,265 | |

Number of Board Weeks: Total 266,265

Number of Persons in Camp: Total 128,789

One point should be noted. The 1930 group included a much smaller proportion of private and long term camps. There was less of a selection of the larger, better known camps among the various organizations with the result that the average length of stay in camp per camper dropped considerably. The average length of time per camper for the camps of one organization dropped from approximately six weeks in 1929 to two weeks in 1930. Similar decreases were observed in other groups, though none so marked as this. As a result while the average stay in camp per person for all camps in 1929 was three weeks it dropped to two weeks in 1930, as noted above.

Still another point had been open to question in 1929. There was no way to determine the geographic distribution of camps with accuracy whereas this was available for 1930. The following table indicates that the group is probably representative of the actual distribution of camps over the country.

TABLE IV

LOCATION OF COOPERATING CAMPS—1930

| Region | Number | Per cent |
|---|---|---|
| New England | 66 | 19 |
| Middle Atlantic | 112 | 33 |
| Southern | 36 | 11 |
| Mid-western | 82 | 25 |
| Far western | 39 | 12 |
| Total | 335 | 100 |

## THE REPORT FORMS USED—1930

In addition to securing a larger number of camps an attempt was made also to secure more complete and reliable data from the camps which did cooperate. On the basis of the previous year's experience an entirely new report form was drawn up. It will be evident from the form printed below that it has one great advantage—the possibility of the tabulator misunderstanding the intent of the reporter in the camp is very largely eliminated. There is less opportunity to describe illnesses and accidents, on the other hand, which do not fit into the pattern of the report. This made little difference in the case of illnesses since space was provided to write in the name of the disease. It did result in a much larger percentage of accidents and injuries being clasified as 'Unknown' or as 'Unclassified' which proved to be an undesirable situation. The reports were made weekly by the participating camps. The forms are given below.

FIGURE 4

Please do not omit

Number in Camp During the Week

Campers_____

Staff Members_____

# Weekly Illness Report

*"Suppose a 12 year old boy in your camp develops tonsilitis on his fourth day in camp which keeps him in bed for two days and out of strenuous activities for two more. The attack was due to enlarged tonsils which should have been removed before camp." The report on this illness is made correctly in the columns headed "sample". For each illness occurring during the week make a similar report, checking the one item under each number most descriptive of the illness. As you see, the "nature of the illness" must be written for each case. This sheet provides, then, for reporting seven illnesses. Report all illnesses, but only those which interfere definitely with the individual's participation in camp activities. Use a second blank if more than seven illnesses occur in one week.* (USE AS MANY BLANKS AS NECESSARY TO REPORT ALL ILLNESSES FOR THE WEEK.)

Camp Code No._____ Week Ending_____

| No. | ITEM | ★ | Sample | Report Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Age of individual | 1-2 | 12 | | | | | | | |
| 2 | Nature of illness | 3-4 | | | | | | | | |
| | Case Sample—Tonsilitis | | | | | | | | | |
| | Case 1— | | | | | | | | | |
| | Case 2— | | | | | | | | | |
| | Case 3— | | | | | | | | | |
| | Case 4— | | | | | | | | | |
| | Case 5— | | | | | | | | | |
| | Case 6— | | | | | | | | | |
| | Case 7— | | | | | | | | | |
| 3 | Contributory factors | 5 | | | | | | | | |
| | Fatigue | 1 | | | | | | | | |
| | Lack of sleep | 2 | | | | | | | | |
| | Over-exposure | 3 | | | | | | | | |
| | Emotional strain | 4 | | | | | | | | |
| | Improper eating or food | 5 | | | | | | | | |
| | Particularly susceptible | 6 | X | | | | | | | |
| | None known | 7 | | | | | | | | |
| | Other—(Specify) | 8 | | | | | | | | |
| 4 | Where exposed to infection | 6 | | | | | | | | |
| | Not a contagious disease | 1 | X | | | | | | | |
| | Before coming to camp | 2 | | | | | | | | |
| | Within the camp | 3 | | | | | | | | |
| | On trip out of camp | 4 | | | | | | | | |
| | By visitor to camp | 5 | | | | | | | | |
| | Unknown | 6 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 5 | Sex | 7 | | | | | | | | |
| | Male | 1 | X | | | | | | | |
| | Female | 2 | | | | | | | | |
| 6 | Status in camp | 8 | | | | | | | | |
| | Camper | 1 | X | | | | | | | |
| | Staff member | 2 | | | | | | | | |

| No. | ITEM | ★ | Sample | Report Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Results of illness | | | | | | | | | |
| | Days confined to bed | 9-10 | 2 | | | | | | | |
| | Additional days kept from some activities | 11-12 | 2 | | | | | | | |
| | Sent home—(Check here if sent home) | | | | | | | | | |
| | (If permanent after-effects or death result please check here and describe on additional page) | | | | | | | | | |
| | Days in camp preceding illness | 13-14 | 4 | | | | | | | |
| 8 | Similar illnesses in the future could probably be prevented by: | 15-16 | | | | | | | | |
| | Tonsillectomy before camp | 01 | X | | | | | | | |
| | Pre-camp examinations or treatment, other | 02 | | | | | | | | |
| | Prevention of the entrance of contagious diseases into camp, i.e., thru water, milk, exposure | 03 | | | | | | | | |
| | Control of contagions within the camp | 04 | | | | | | | | |
| | Proper diet, elimination | 05 | | | | | | | | |
| | Proper rest, sleep, exercise | 06 | | | | | | | | |
| | Control of insects | 07 | | | | | | | | |
| | Supervision on hikes | 08 | | | | | | | | |
| | Cleanliness, care of minor infections by campers | 09 | | | | | | | | |
| | Regulation of exposure to weather, sudden chilling | 10 | | | | | | | | |
| | Proper eye and ear hygiene | 11 | | | | | | | | |
| | Elimination of poison ivy | 12 | | | | | | | | |
| | Unknown | 13 | | | | | | | | |
| | Other—(Specify) | 14 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

★ Figures in this column are for use of statisticians.

FIGURE 5

Form-D

Please do not omit

Number in Camp During the Week

Campers_____

Staff Members_____

# Weekly Accident Report

*"Suppose a 12 year old boy camper, while swimming, cuts his foot on a piece of glass so that he is in bed one day and kept out of athletics and swimming for four days, this happening on his tenth day in camp." The report on this accident would be made as illustrated in the columns headed "sample." Make a similar report for each accident occurring during the week, checking those items which are most descriptive of it. This blank provides, then, for reporting seven accidents. Report all accidents, but only those, which are serious enough to interfere definitely with the individual's participation in camp activities. Minor scratches, bruises and the like which do not keep individuals out of activities should not be reported.* RETURN TO EDUCATIONAL DIVISION, NATIONAL SAFETY COUNCIL, 1 PARK AVE. NEW YORK.

Camp Code No.....  Week Ending.....

| No. | ITEM | ★ | Sample | Report Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Age of injured** | 1-2 | 12 | | | | | | | |
| 2 | **Nature of injury** (Check One) | 3-4 | | | | | | | | |
| | Cut, by tools | 01 | | | | | | | | |
| | Cut, by sticks, stones | 02 | | | | | | | | |
| | Cut, by glass, tin, nails | 03 | X | | | | | | | |
| | Bruise | 04 | | | | | | | | |
| | Fracture—Arm | 05 | | | | | | | | |
| | Fracture—Leg | 06 | | | | | | | | |
| | Fracture—Rib | 07 | | | | | | | | |
| | Fracture—Finger or Toe | 08 | | | | | | | | |
| | Dislocation | 09 | | | | | | | | |
| | Sprains—Ankle, Knee | 10 | | | | | | | | |
| | Sprain—Other | 11 | | | | | | | | |
| | Sunburn | 12 | | | | | | | | |
| | Burns | 13 | | | | | | | | |
| | Bites | 14 | | | | | | | | |
| | Infections | 15 | | | | | | | | |
| | Unclassified | 16 | | | | | | | | |
| 3 | **Kind of accident** | 5-6 | | | | | | | | |
| | Fall—on the ground | 01 | | | | | | | | |
| | Fall—from horse | 02 | | | | | | | | |
| | Fall—from tree, building | 03 | | | | | | | | |
| | Slips with tool | 04 | | | | | | | | |
| | Collision—with persons | 05 | | | | | | | | |
| | Collision—with fixed object | 06 | | | | | | | | |
| | Collision—with moving object | 07 | | | | | | | | |
| | Defective material | 08 | | | | | | | | |
| | Stepped on object | 09 | X | | | | | | | |
| | Bites | 10 | | | | | | | | |
| | Athletic—unclassified | 11 | | | | | | | | |
| | Unclassified | 12 | | | | | | | | |
| 4 | **Occupation when injured** | 7-8 | | | | | | | | |
| | Arts and craft work, shop | 1 | | | | | | | | |
| | Swimming or boating | 2 | X | | | | | | | |
| | Baseball | 3 | | | | | | | | |
| | On hike | 4 | | | | | | | | |
| | Organized recreation—Other than above | 5 | | | | | | | | |
| | Police or fatigue duty | 6 | | | | | | | | |
| | Walking or running in camp area | 7 | | | | | | | | |
| | Others—(specify) | 8 | | | | | | | | |

| No. | ITEM | ★ | Sample | Report Number 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | **Sex** | 9 | | | | | | | | |
| | Male | 1 | X | | | | | | | |
| | Female | 2 | | | | | | | | |
| 6 | **Status in camp** | 10 | | | | | | | | |
| | Camper | 1 | X | | | | | | | |
| | Staff member | 2 | | | | | | | | |
| 7 | **Disability** | | | | | | | | | |
| | Days in bed | 11-12 | 1 | | | | | | | |
| | Days partially disabled | 13-14 | 4 | | | | | | | |
| | (In the event of loss of organ, limb or life please check here and describe by note below) | | | | | | | | | |
| 8 | **Number of days in camp preceding the accident** | 15-16 | 10 | | | | | | | |
| 9 | **Similar accidents could probably be prevented in the future by:** | 17-18 | | | | | | | | |
| | Improving pathways | 01 | | | | | | | | |
| | Removing all glass, tin, nails | 02 | | | | | | | | |
| | Having sufficient railings, stairways | 03 | | | | | | | | |
| | Clean up of swimming area | 04 | X | | | | | | | |
| | Other improvements — (specify) | 05 | | | | | | | | |
| | *Education and supervision* In kitchen and dining room | 06 | | | | | | | | |
| | Around the dock | 07 | | | | | | | | |
| | On athletic fields | 08 | | | | | | | | |
| | At the cabins | 09 | | | | | | | | |
| | In the use of tools | 10 | | | | | | | | |
| | In the care of wounds | 11 | | | | | | | | |
| | In athletic techniques | 12 | | | | | | | | |
| | In riding technique | 13 | | | | | | | | |
| | Concerning poison ivy | 14 | | | | | | | | |
| | Concerning sunburn | 15 | | | | | | | | |
| | As to proper shoes, clothing | 16 | | | | | | | | |
| | Other preventive measures—(specify) | 17 | | | | | | | | |
| | Unknown | 18 | | | | | | | | |

★ Figures in this column are for use of statisticians.

In order to understand conditions which might contribute to good or poor health additional information was needed concerning program, supervision and sanitation. The report blank covering these conditions for 1929 was revised and enlarged to supply these items. 335 camps of the 503 sending weekly reports returned the blank. There was seemingly no reason to think this group was selected in any particular so as to influence the results. A copy of the report form is herewith given.

FIGURE 6

| | * | | * |
|---|---|---|---|
| 1. Code Number | [19-20-21] | 14. Sleep Scheduled Daily-night | [34-35] |
| 2. Location | [22] | 8:00 hours | 01 |
| New England | 1 | 8:15 hours | 02 |
| Middle Atlantic | 2 | 8:30 hours | 03 |
| Southern | 3 | 8:45 hours | 04 |
| Mid-western | 4 | 9:00 hours | 05 |
| Far west | 5 | 9:15 hours | 06 |
| | | 9:30 hours | 07 |
| 3. Type of Camp | [23] | 9:45 hours | 08 |
| Boys | 1 | 10:00 hours | 09 |
| Girls | 2 | 10:15 hours | 10 |
| Co-educational | 3 | 10:30 hours | 11 |
| | | 11:00 hours | 12 |
| 4. Board of Health Inspection | [24] | More than 11:00 | 13 |
| None | 1 | | |
| By Local Health Officer | 2 | 15. Rest Hour Length | [36] |
| By State Health Officer | 3 | ¼ hour | 1 |
| | | ½ hour | 2 |
| 5. Results of Inspection | [25] | 1 hour | 3 |
| Approved as found | 1 | 1¼ hour | 4 |
| Recommendations now carried out | 2 | 1½ hour | 5 |
| Recommendations to be carried out later | 3 | None | 6 |
| | | 16. Rest Hour—How Observed | [37] |
| 6. Water Supplies—Drinking Water | [26] | Sleep or complete rest, no reading or writing | 1 |
| No bacteriological analysis | 1 | In bunk or cabin—reading, writing permitted | 2 |
| One analysis | 2 | In cabin or in cabin area | 3 |
| More than one analysis | 3 | No regulations but no activities scheduled | 4 |
| | | No rest hour scheduled | 5 |
| 7. Water Supplies—Swimming Water | [27] | | |
| No bacteriological analysis | 1 | 17. Athletic Program | [38] |
| One analysis | 2 | No athletics | 1 |
| More than one analysis | 3 | Program light, informal, unorganized | 2 |
| | | Partly organized, athletics a considerable part of camp program | 3 |
| 8. Source of Milk Supply | [28] | Organized with all campers urged to participate | 4 |
| Supervised Dairy | 1 | Fully organized-camp program chiefly athletic in nature | 5 |
| Farmer or Private Individual | 2 | | |
| | | 18. The Camp Program Includes the Following Competitive Activities | [39] |
| 9. Kind of Milk Used | [29] | Athletic Leagues | |
| Raw Milk | 1 | Cabin Inspections | |
| Certified Milk | 2 | Sectional competitions (Between sections of camp where such exist, in athletics, spirit, cleanliness and the like.) | |
| Pasteurized Milk | 3 | Personal awards and honors (For best camper or other awards on personal competition basis.) | |
| 10. Pre-Camp Physical Examinations, Campers and Staff | [30] | | |
| None required | 1 | 19. Menus Made by | [40] |
| Required of all campers | 2 | Dietician in camp | 1 |
| Required of all campers and staff members | 3 | Consulting Dietician | 2 |
| | | Director | 3 |
| 11. Physical Examination—Food Handlers | [31] | Health Officer | 4 |
| None required | 1 | Chef | 5 |
| Physical examination only | 2 | Business Manager | 6 |
| Physical examination plus urine and stool analysis | 3 | Other | 7 |
| | | 20. Are Meals based on a measured Calory basis | [41] |
| 12. First Physical Examination in Camp-Campers | [32] | Yes | 1 |
| None given | 1 | No | 2 |
| First day of arrival | 2 | | |
| First week | 3 | 21. If measured what daily calory allowance is used per person | |
| 13. Resident Camp Health Officer | [33] | | |
| Registered Physician | 1 | 22. Food cost per day per person; exclusive of preparation and service: (Optional) | |
| Medical Student | 2 | | |
| Registered Nurse | 3 | | |
| Practical Nurse | 4 | | |
| First Aid Man | 5 | | |
| None | 6 | | |
| (It is assumed that the camp may have arrangements with nearby physicians to handle serious cases. The above item refers only to health officers living within the camp.) | | | |

*Pay no attention to this column—figures are for use of statistician only

Two additional items of information were secured. The first was the age distribution for each camp. The second was a compilation of the length of time spent in camp for the various individuals in each camp. Neither of these items had been secured in 1929.

### THE PLAN OF THE EXTENSION OF THE STUDY

There were two ways in which the data for the two years could be studied. The more obvious way, perhaps, was to combine all data for the two years and draw conclusions from the data thus combined. A second way was to take the conclusions of the first year's study and test them individually by the 1930 data. From the standpoint of economy the second method was desirable. In addition it seemed to the writer that if the results of two practically independent studies confirmed each other the conclusions thus reached would be more reliable than the results of one study. This second method was followed. The procedure, then, for the second year of the study was very simple. It was to refine and repeat the first year's study and compare results.

Chapter IV then, is devoted to a detailed analysis of safety conditions in camps in 1929. The general conclusions are drawn and the major problems stated. Chapter V is given over to a testing of these conclusions by applying them to the data for 1930.

Similarly Chapter VI is an analysis of health conditions in 1929 while Chapter VII again puts the conclusions to test by comparing them with the findings for 1930.

Chapter VIII is a summary of problems and possible remedial measures. Chapter IX is a summary and evaluation of present methods of state control of safety and health in camps.

# CHAPTER IV

## SAFETY CONDITIONS IN CAMPS—1929

*Items to be Studied.*

At the beginning of the study the Committee felt that the most important single item of information would be a careful, accurate description of the exact way in which the accident occurred. It was also recognized that it is exceedingly difficult to get a meaningful description of an event so that two questions were asked in the attempt to secure this. The first question was the rather commonplace question, "What was the individual doing?" It was supposed that this would bring out the somewhat uncritical, generalized statement that an untrained reporter might be expected to give. This was followed by the question, "What happened?" which we hoped might require a rather careful analysis of the accident. In many cases the two questions did just this while in many others the second question was either omitted or answered equally uncritically so that for the data as a whole the information from these questions was hardly as good as might be desired.

When the analysis of the data was begun and the items were being arranged for tabulation it soon became evident that we had originally over-estimated the value of the information these answers might give us. When we began to build up a code by which these answers could be classified we found that we were, actually, trying to set up a table of the causes of the accidents. Now obviously that is the item of information we should most like to have but all the learnings accumulated in industrial safety experience bear out the fact that the causes of accidents are notoriously difficult to determine. This point is so fundamental for an understanding of the reasons underlying the procedure adopted that it seems worth while to take the time to illustrate it.

In one of the camps studied a representative of the National Office of the organization was visiting the camp. The Water Front Director was on duty entertaining the visitor until the afternoon swim was announced. In his haste to get to the swimming area as soon as possible, and due to the delay caused by entertaining the visitor, the Water Front Director neglected to tie his shoes after changing clothes and started running down the path to the dock.

While running he tripped on a loose shoe string and fell and in so doing received a severe cut on a piece of glass beside the path. Any attempt to state the cause of this accident soon brings out the fact that there was no one cause perhaps but many contributory factors, and though this is a selected case, nevertheless, exactly the same difficulty is found in a surprisingly large percentage of accidents. A code for tabulating the causes of the accidents would have been almost impossible to devise in a satisfactory manner.

An analysis of the data above shows that there are several bits of information, however, which do lend themselves to tabular treatment in that they are definite and specific. To begin with, we know the occupation of the individual, he was running along a path, or if we care to be more specific, he was running down a path to the dock. We know the accident, a fall and, if we desire, falls can be widely classified. We know the injury, a cut, and again cuts can be classified in detail if we desire. Finally we are able to pick out of this one or more ways in which the accident or the injury might have been prevented. First, we know that glass should not be left along paths, so we get a definite preventive of the injury by the proper clean-up of the grounds and the removal of the glass. This would not have prevented the fall, it is true, but this also lends itself to tabular treatment.

Several hundred accident reports were carefully studied and it was found that the four fold classification above, that is, classification of the injury, the accident, the occupation when injured and the preventive measure, could be adapted easily to most of the cases and in a large majority of them there seemed little doubt but that the classifications were the obviously logical ones. There was one other item of information given on the report form which, it was discovered, could be adequately covered by the above classification, namely, the location of the accident. In a majority of cases the occupational classification also told the location, as in the case of swimming, or hiking or athletic accidents. The cases in which the location was not rather obviously suggested by the occupational classification were so few that it did not seem worth while to make this classification.

Several questions asked on the report card were found to supply information of such a nature that for some reason or another it did not seem worth while to classify them. Item 4, Time of

Accident was one; item 10—"Was Individual Normal?" was very indefinite and was omitted as, for the same reason, were items 12 and 13, concerning the physical condition of the individual. Item 15, concerning the previous reports on the individual, was omitted so often it could not be tabulated. The items under the general heading "How Accident Happened" were tabulated as described above. All other items on the report card were tabulated and will be discussed in detail as the tabular results are shown.

*Analysis of Items Studied.*

*I. Classification of Injuries.*

As was stated in the preceding chapter, accident and injury are not synonymous terms, an accident being a mishap which may or may not result in an injury. Now the best way to prevent injuries is to prevent the accidents from which they result, but this, like all good rules, is not without its exceptions. There are cases where it does not seem practical to attempt to prevent accidents and where it may be necessary to study injury prevention directly. For example, campers playing on grassy playgrounds in camps will probably have many falls despite any campaigns against falling that might be devised. If sharp stones, broken glass, rusty nails and the like are left around the playground many injuries will result from the falls which, otherwise, would probably be harmless. The feasible plan in this case would be to clean up the playground rather than to attempt to prevent the falls. An analysis will be made, then, both of injuries and of accidents.

When the tabulation of injuries was begun no standard classification could be found which seemed well adapted to this particular study. Accordingly the injuries were listed and tabulated in detail with little attempt at classification being made until all reports had been tabulated. After this was done the groupings used in the table below were worked out as giving the classification best fitting the data. It has the additional virtue of being fairly well adapted to comparison with other injury statistics should such comparisons be desired. Exactly the same procedure was used in building up a classification of accidents.

The first thing needed is a general picture of the injuries that occur in organized camps.

TABLE V

ACCIDENTAL INJURIES IN 114 SUMMER CAMPS—1929

TOTAL CAMP WEEKS—105,640

| | Number | Per Cent |
|---|---|---|
| Cuts and lacerations | 517 | 36% |
| Sprains | 237 | 16% |
| Bites and stings | 185 | 13% |
| Infections | 130 | 9% |
| Bruises, contusions | 106 | 7% |
| Poison ivy | 96 | 6% |
| Burns, sunburn | 69 | 5% |
| Fractures | 44 | 3% |
| Dislocations | 10 | 1% |
| Unclassified | 61 | 4% |
| | 1,455 | 100% |

Fatalities—One (Drowning or heart failure of female staff member)

Loss of time—Complete, 662 Days

Loss of time—Partial, 5,729 Days

Sent Home—Six

Ratio of accidents to camp weeks—1 to 74

Average time loss per accident—Complete—One half day

Partial—Four days

The table indicates that in a camp of seventy-five persons one accidental injury would be expected weekly. This would, on the average, result in the injured person being completely disabled, probably in bed, for one-half day and kept from some camp activities for perhaps four days more. In only one camp in twenty during the entire season would an injury occur which would be serious enough to force the injured to leave camp. There were no accidental fatalities among campers, and no losses of limb.

The distribution of kinds of injuries varies somewhat from the distribution in other occupations. In the table below is given the ranking of injuries by frequency of occurrence as compiled by Dr. H. J. Stack in 1929.[1] The ratings for camp injuries as quoted by him are omitted.

[1] P. 99—*Safety Education in the Secondary Schools.* H. J. Stack—1929—National Bureau of Casualty and Surety Underwriters—pp. 157.

TABLE VI

RANK OF COMMON INJURIES BY FREQUENCY OF OCCURRENCE—OUTSIDE OF CAMP

| Kind of Injury | Source of Data | | | |
|---|---|---|---|---|
| | School | Industrial | Ambulance Call | Average |
| Wounds (cuts, lacerations, abrasions) | 1 | 2 | 1 | 1.33 |
| Bruises, swellings, contusions | 2 | 1 | 2 | 1.67 |
| Wrenches, sprains, strains, dislocations | 3 | 3 | 4 | 3.33 |
| Fractures, broken ribs | 4 | 4 | 3 | 3.67 |
| Burns (including sunburn) | 5 | 5 | 5 | 5.00 |
| Profuse bleeding | 6 | 6 | 6 | 6.00 |

Next, we shall need to know the accidents from which these injuries result. The table below gives the tabulation.

TABLE VII

ACCIDENTS IN 114 SUMMER CAMPS—1929

Total Camp Weeks—105,640

| | | |
|---|---|---|
| Falls | 380 | 27% |
| Stepping on or striking cutting objects | 222 | 15% |
| Bites, stings | 183 | 13% |
| Slips in using tools | 143 | 10% |
| Collisions, persons, fixed objects | 124 | 8% |
| Athletic, miscellaneous | 73 | 5% |
| Defective materials | 20 | 1% |
| Unclassified | 101 | 7% |
| Unknown | 209 | 14% |
| | 1,455 | 100% |

With these general pictures given we are now ready for the analysis of the factors related to accidents. Among the factors which might influence camp accidents would be the position in camp, that is, camper or staff member, sex, occupation when injured, previous camp experience, or the length of time in camp preceding the accident; the type of camp and age. There may be other factors but these would seem to be the obvious ones. We can restate the first two factors in the form of questions as, "What

effect does being a camper or being a staff member have on the camp safety record?" and "What effect does being a boy or being a girl have on the camp safety record?" The following tables answer the questions.

TABLE VIII

A COMPARISON OF CAMP INJURIES OF BOYS AND GIRLS, CAMPERS AND STAFF MEMBERS—1929

| Injury | Camper | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Cuts: | | | | | | | |
| By sticks or stones | 158 | 31 | 189 | 6 | 6 | 12 | 201 |
| By glass, tin, nails | 116 | 24 | 140 | 6 | 10 | 16 | 156 |
| By tools | 81 | 27 | 108 | 12 | 6 | 18 | 126 |
| Unclassified | 30 | 3 | 33 | 0 | 1 | 1 | 34 |
| | 385 | 85 | 470 | 24 | 23 | 47 | 517 |
| Sprains: | | | | | | | |
| Ankle, knee | 40 | 78 | 118 | 10 | 19 | 29 | 147 |
| Other | 41 | 29 | 70 | 9 | 11 | 20 | 90 |
| | 81 | 107 | 188 | 19 | 30 | 49 | 237 |
| Bites | 25 | 158 | 183 | 0 | 2 | 2 | 185 |
| Infections | 80 | 31 | 111 | 11 | 8 | 19 | 130 |
| Bruises | 67 | 24 | 91 | 6 | 9 | 15 | 106 |
| Poison ivy | 35 | 51 | 86 | 7 | 3 | 10 | 96 |
| Burns, sunburn | 42 | 14 | 56 | 9 | 4 | 13 | 69 |
| Fractures: | | | | | | | |
| Arm | 18 | 5 | 23 | 1 | 0 | 1 | 24 |
| Fingers, ribs | 8 | 3 | 11 | 1 | 1 | 2 | 13 |
| Leg | 5 | 1 | 6 | 1 | 0 | 1 | 7 |
| | 31 | 9 | 40 | 3 | 1 | 4 | 44 |
| Dislocations | 6 | 3 | 9 | 1 | 0 | 1 | 10 |
| Others | 38 | 15 | 53 | 6 | 2 | 8 | 61 |
| TOTAL | 790 | 497 | 1,285 | 86 | 82 | 168 | 1,455 |

[114 Camps—105,640 Camp Weeks.]

TABLE IX

A COMPARISON OF INJURIES BETWEEN BOYS AND GIRLS, CAMPERS AND STAFF MEMBERS—BY PER CENTS—1929

| Injury | Camper | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Cuts: | | | | | | | |
| By glass, tin, nails | 20.1 | 4.7 | 11.0 | 7.0 | 12.2 | 9.5 | 10.8 |
| By sticks or stones | 14.6 | 6.2 | 14.8 | 7.0 | 7.3 | 7.2 | 13.8 |
| By tools | 10.3 | 5.6 | 8.4 | 14.0 | 7.3 | 10.7 | 8.7 |
| Unclassified | 4.0 | .6 | 2.6 | 0.0 | 1.2 | .6 | 2.3 |
| Sprains: | | | | | | | |
| Ankle, knee | 5.1 | 15.6 | 9.1 | 11.6 | 23.1 | 17.3 | 10.1 |
| Other | 5.1 | 5.8 | 5.5 | 10.5 | 13.4 | 11.9 | 6.2 |
| Bites | 3.2 | 31.5 | 14.2 | ..... | 23.1 | 1.2 | 12.8 |
| Bruises | 8.5 | 2.8 | 7.1 | 7.0 | 3.6 | 8.9 | 7.3 |
| Burns, Sunburn | 5.3 | 4.7 | 4.4 | 10.6 | 9.8 | 7.8 | 4.7 |
| Infections | 10.1 | 6.2 | 8.5 | 12.8 | 2.4 | 11.3 | 9.0 |
| Poison ivy | 4.4 | 10.2 | 6.8 | 8.1 | 13.4 | 6.0 | 6.6 |
| Fractures: | | | | | | | |
| Arms | 2.3 | 1.0 | 1.8 | 1.1 | 11.0 | .6 | 1.6 |
| Fingers, Ribs | 1.0 | .6 | .5 | 1.1 | 1.2 | 1.2 | .9 |
| Leg | .6 | .2 | .9 | 1.1 | 4.9 | .6 | .5 |
| Dislocations | .9 | .6 | .7 | 1.1 | ..... | .6 | .7 |
| Others | 4.5 | 4.7 | 3.9 | 7.0 | 2.4 | 4.6 | 4.0 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[114 Camps—105,640 Camp Weeks.]

The table shows that both the status in camp and sex have a considerable influence on the accidental injury frequency. The frequency rate as compared between the various groups is shown by the table:

TABLE X

A COMPARISON OF ACCIDENT FREQUENCY RATES BETWEEN CAMPERS AND STAFF MEMBERS—1929

| | Camp Weeks | Accidents | Ratio |
|---|---|---|---|
| Male Campers | 48,762 | 790 | 1 to 62 |
| Female Campers | 39,176 | 497 | 1 to 84 |
| All Campers | 87,938 | 1,137 | 1 to 76 |
| Staff Members | 17,702 | 168 | 1 to 105 |

The table shows that boys have approximately forty per cent more injuries than girls, and campers as a whole have almost fifty per cent more injuries than staff members. In addition to the difference in frequency of injury there are, also, some significant differences in the distribution of accidents. Cuts and lacerations account for some forty-nine per cent of the injuries to boys, eighteen per cent of the injuries to girls. Girls report almost twice the ratio of sprains and are particularly susceptible to sprained ankles and knees. This is true, also, for female staff members. The high frequency of bites and stings among girls is due entirely to the fact that one camp reported 151 stings for the season. Boys reported far more sunburn than girls while the girls reported considerably more poison ivy infections. Boys reported considerably more fractures. The percentage of sprains and also of infections was higher among staff members than campers.

In order to get the full meaning of position and sex differences in camp safety, it is necessary to study these factors in their relation to the kinds of accidents as well as to the injuries. The table showing this relationship is given below.

TABLE XI

A COMPARISON OF THE ACCIDENTS OF BOYS AND GIRLS IN CAMP, OF CAMPERS AND STAFF MEMBERS—1929

| Accident | Campers | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Falls: | | | | | | | |
| From trees, buildings | 25 | 5 | 30 | 0 | 0 | 0 | 30 |
| From horses | 5 | 16 | 21 | 3 | 3 | 6 | 27 |
| In organized athletics | 69 | 16 | 85 | 6 | 4 | 10 | 95 |
| On ground, in building | 106 | 93 | 199 | 4 | 25 | 29 | 228 |
| | 205 | 130 | 335 | 13 | 32 | 45 | 380 |
| Stepping on cutting objects | 166 | 36 | 202 | 7 | 13 | 20 | 222 |
| Bites, stings | 16 | 159 | 175 | 4 | 4 | 8 | 183 |
| Slips in use of tools | 76 | 39 | 115 | 16 | 12 | 28 | 143 |
| Collisions | 82 | 33 | 115 | 7 | 2 | 9 | 124 |
| Athletic, miscellaneous | 56 | 5 | 61 | 9 | 3 | 12 | 73 |
| Defective materials | 10 | 2 | 12 | 5 | 3 | 8 | 20 |
| Unclassified | 72 | 18 | 90 | 7 | 4 | 11 | 101 |
| Unknown | 107 | 75 | 182 | 18 | 9 | 27 | 209 |
| | 790 | 497 | 1,287 | 86 | 82 | 168 | 1,455 |

[114 Camps—105,640 Camp Weeks.]

TABLE XII

A COMPARISON OF THE ACCIDENTS OF BOYS AND GIRLS IN CAMP, OF CAMPERS AND STAFF MEMBERS—BY PER CENTS—1929

| Accident | Campers | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Falls: | | | | | | | |
| From trees, buildings | 3.1 | 1.0 | 2.3 | ..... | ..... | ..... | 2.6 |
| From horses | 0.6 | 3.2 | 1.6 | 3.6 | 3.6 | 3.6 | 1.8 |
| In organized athletics | 13.5 | 18.6 | 15.4 | 4.6 | 30.5 | 17.2 | 15.6 |
| On ground, in building | 8.7 | 3.2 | 6.5 | 6.9 | 4.8 | 6.0 | 6.5 |
| TOTAL | 25.9 | 26.0 | 25.8 | 15.1 | 38.9 | 26.8 | 26.5 |
| Stepping on cutting objects | 21.0 | 7.2 | 16.0 | 8.2 | 15.9 | 12.0 | 15.2 |
| Bites, stings | 2.3 | 32.0 | 13.5 | 4.6 | 4.8 | 4.7 | 12.5 |
| Slips in use of tools | 9.6 | 8.0 | 9.0 | 18.6 | 14.4 | 16.8 | 9.8 |
| Collisions | 10.5 | 6.6 | 9.0 | 8.2 | 2.4 | 5.3 | 8.5 |
| Athletic, miscellaneous | 7.0 | 1.0 | 4.7 | 10.4 | 3.6 | 7.5 | 5.0 |
| Defective materials | 1.2 | .4 | 1.0 | 5.8 | 3.6 | 4.7 | 1.4 |
| Unclassified | 9.0 | 3.6 | 7.0 | 8.1 | 4.8 | 6.5 | 6.9 |
| Unknown | 13.5 | 15.2 | 14.0 | 21.0 | 10.8 | 15.7 | 14.2 |
| TOTALS | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[114 Camps—105,640 Camp Weeks.]

This gives more explanation of the difference in frequency rate than did the preceding table. In the first place we find that 125 accidents occurred to boys engaged in some form of athletics against twenty-one such accidents to girls. Also boys report seventy-six accidents against thirty-nine for girls in the use of tools. The two suggest the possibility that one large factor in the different rate between boys and girls may be occupational differences between the two groups. We can verify this, to some extent, later by the study of the occupations of the individuals when injured. In the second place, in collisions with other people, with fixed objects, in being struck by thrown objects or other people boys lead the girls by 160 to fifty-one. This difference is somewhat occupational in nature, but it is probably even more a difference of temperament than occupation. This would seem to be a second possibility, then, for the difference in rate. Third, there were 166 accidents to boys caused by stepping on glass, nails, tin and the like against thirty-six to girls. There are probably two explanations for this. First, girls

may be more careful to wear shoes than boys, but even more important it would suggest than girls' camps may be better cared for, from the standpoint of good "housekeeping," than are boys' camps. This conclusion is based on the assumption that glass, nails, tin and the like should not be left lying around the grounds in a well cared for children's camp. Three factors, then, may be making for the different accidental injury rate in boys' and girls' camps; first occupational differences, second temperamental differences, third, girls' camps would seem to be better cared for physically.

*Occupational Analysis.*

Next we shall need an analysis of the occupations of the individuals when injured. If there really are occupational differences which have significant influence on the accident rate they will be shown from this analysis.

TABLE XIII

OCCUPATIONS WHEN INJURED—1929—BOYS, GIRLS, CAMPERS, STAFF MEMBERS

| Occupations | Campers | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Swimming, boating | 109 | 38 | 147 | 11 | 6 | 17 | 164 |
| Baseball | 105 | 7 | 112 | 9 | 3 | 12 | 124 |
| Hiking | 37 | 43 | 80 | 1 | 5 | 6 | 86 |
| Recreation, other than above | 122 | 54 | 176 | 14 | 13 | 27 | 203 |
| | 373 | 142 | 515 | 35 | 27 | 62 | 577 |
| Shop, arts, crafts | 44 | 17 | 61 | 9 | 4 | 13 | 74 |
| Fatigue duties | 60 | 37 | 97 | 16 | 16 | 32 | 129 |
| Walking or running along pathways in camp | 130 | 220 | 350 | 12 | 16 | 28 | 378 |
| Unclassified | 131 | 52 | 183 | 10 | 9 | 19 | 202 |
| Unknown | 52 | 29 | 81 | 4 | 8 | 12 | 93 |
| | 790 | 497 | 1,287 | 86 | 80 | 166 | 1,453 |

[114 Camps—105,640 Camp Weeks.]

TABLE XIV

OCCUPATIONS WHEN INJURED—1929—BOYS, GIRLS, CAMPERS, STAFF MEMBERS—BY PER CENTS

| Occupations | Campers | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Swimming, boating | 13.8 | 7.7 | 11.4 | 12.7 | 7.5 | 10.2 | 11.3 |
| Baseball | 13.2 | 1.4 | 8.6 | 10.4 | 3.8 | 7.2 | 8.5 |
| Hiking | 4.8 | 8.7 | 6.2 | 1.1 | 6.3 | 3.6 | 5.9 |
| Recreation, other than above | 15.5 | 11.0 | 14.0 | 16.3 | 16.2 | 16.3 | 14.0 |
| Shop, arts, crafts | 5.6 | 3.4 | 5.0 | 10.4 | 5.0 | 7.9 | 5.1 |
| Fatigue duties | 7.6 | 7.5 | 7.5 | 18.5 | 20.0 | 19.1 | 8.9 |
| Walking or running along pathways in camp | 16.5 | 44.1 | 27.0 | 14.0 | 20.0 | 17.0 | 26.0 |
| Unclassified | 16.5 | 10.4 | 14.0 | 11.6 | 11.2 | 11.4 | 13.9 |
| Unknown | 6.5 | 5.8 | 6.3 | 5.0 | 10.0 | 7.3 | 6.4 |
| TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[114 Camps—105,640 Camp Weeks.]

The analysis of the occupations of the individuals when injured is in agreement with the suggestions that the occupational differences of boys and girls may contribute largely to the difference in accident rates. The chief differences are in the number injured in athletics and it seems reasonable to assume that this is due to the fact that boys' camps have more athletics, and more strenuous athletics, than do girls' camps. In this connection it might be mentioned that some 75% of the boys' camps report competitive athletic leagues while only about 25% of the girl's camps report them. Girls have more accidents while riding and on hikes while boys uphold their traditional reputation by having twenty-eight accidents against one for girls while climbing and fighting, as shown in the detailed tabulation of the unclassified group. The difference in the general condition of the buildings, grounds and equipment is not suggested in this study as it seemed to have been in the preceding one. It might be mentioned that only five of the 164 accidents while swimming and boating were related to the danger of drowning. Of these, as stated before, one was fatal.

It is interesting to the writer to note that almost twice as many accidents occur during the performance of fatigue duties as in all

kinds of shop, arts and crafts work. Certainly our craft work is well supervised or little of it is done or else fatigue duties must be very hazardous. Many of the accidents during fatigue duty occur while campers are cutting wood. Particular attention should be called to the obvious danger of cutting wood for campfire after dark, an activity which seems to be more common than could be desired.

*Previous Camping Experience and Safety.*

The next question to be asked is, "Is it the new and inexperienced campers who meet with most of the accidents, or, what influence does experience in camp have on camp safety?" This question can be answered in part from the item, "number of days in camp before the accident occurred." In the camps studied there were approximately 36,000 individuals. Most of them remained in camp for a period of at least ten days, since this is the minimum period for which most camps accept campers. Forty-one accidents occurred to individuals during their first three days in camp, an average number of fourteen per day. 218 accidents occurred to individuals during the fourth to the tenth day of their time in camp, an average of thirty-one per day. Therefore more than twice as many accidents per day occurred to individuals between the fourth and tenth days as between the first and third. This is somewhat unexpected but the probable explanation would seem to be that new campers have not gotten into camp activities to any large extent at that time. These figures are for campers attending camp for their first year as determined by the item, "previous camp experience." For this group the first three days would seem to be the safest time during camp.

There is no basic distribution of the number of campers staying in camp for longer than ten days so that another method must be used to determine the influence of remaining in camp longer than this period. In the camps representing two of the organizations there were 6,764 different individuals who were in camp for 26,247 board weeks, or an average of almost six weeks per individual. In the remaining camps there were 30,628 individuals in camp for a total of 69,393 board weeks, or an average of slightly more than two weeks per individual. Had all the camps in the first group

reported for the entire season the average per person would have been considerably higher, and had the staff members in the second group been excluded, the average length of time per person would have been decreased. This, therefore, gave two large groups with a decided difference in the average length of time their campers remained at camp. In addition the deviations from this mean in the long term group would seem to be very small as in most of them campers were accepted for the full season only, and in almost all of them only a very few individuals would be in camp for a shorter period than four weeks. On the other hand many of the camps in the second group accept campers only for one to two weeks' periods and only a few individuals, comparatively, of the 30,628 would be in camp for longer than four weeks. In both groups the deviation, therefore, would seem to be small. The table below shows the injuries, in summarized form, occurring in the long and the short term group.

TABLE XV

A COMPARISON OF INJURY RATES BETWEEN LONG AND SHORT TERM CAMPS—1929

| | Board Weeks | Accidents | Ratio |
|---|---|---|---|
| Long Term Camps | 36,247 | 315 | 1 to 115 |
| Short Term Camps | 69,393 | 1,121 | 1 to 62 |

In the long term group, then, there is one accident weekly to each 115 individuals, in the short term group one to each sixty-two individuals. The logical suggestions to account for this difference would seem to be that as the long term campers remain in camp the accident frequency rate progressively decreases, which does not altogether fall in line with the suggestion above that fewer accidents occur during the first three days a camper is in camp. By the calculation of the weekly accident frequencies in both groups of camps this seeming contradiction can be disproved or established. The table given below is derived by determining the number of accidents weekly to each 100 individuals, as a common base is necessary if the comparison is to be valid.

TABLE XVI

ACCIDENT FREQUENCIES BY WEEKS—LONG TERM GROUP—1929

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Number in camp | 5,864 | 5,864 | 5,864 | 5,783 | 3,583 | 3,140 | 2,161 | 2,161 | 2,161 |
| Accidents | 25 | 56 | 37 | 53 | 48 | 26 | 43 | 14 | 13 |
| Rate per 100 individuals | .5 | .9 | .6 | .9 | 1.4 | .9 | 1.7 | .6 | .6 |
| By three-week periods | ..... | 2.0 | ..... | 3.2 | ..... | ..... | 2.9 | ..... | ..... |

TABLE XVII

ACCIDENT FREQUENCIES BY WEEKS—SHORT TERM GROUP—1929

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Number in camp | 11,683 | 11,663 | 11,663 | 11,135 | 6,443 | 6,213 | 3,652 | 3,652 | 3,652 |
| Accidents | 85 | 120 | 125 | 147 | 98 | 77 | 92 | 36 | 41 |
| Rate per 100 individuals | .7 | 1.0 | 1.1 | 1.5 | 1.5 | 1.2 | 2.5 | 1.0 | 1.1 |
| By three-week periods | ..... | 2.8 | ..... | ..... | 4.2 | ..... | ..... | 4.6 | ..... |

The two tables show that a difference in frequency rate between the two groups of camps can be found at any time during the camp season, and that the frequency curves for the two groups are not markedly dissimilar. Camp experience, or remaining in camp, seems to have comparatively little influence on the accident rate so that the difference arises not so much from a decrease as the season progresses in the long term group, but from an increase in the rate in August in the short term group. This means that we must seek elsewhere for the explanation of the difference in accident frequencies between the two groups.

Long and short term camps may differ somewhat in the physical equipment of the camps, possibly in the activity programs, again possibly in the selection of campers, and certainly in the amount of supervision they give. We have no data as to the occupational differences in the two groups, that is, the differences in activity program, nor do we know the influence of the selection of campers on accidents. We do have data which may give light as to the differences in the general care of the properties in the two groups,

and also on the difference in the amount of staff supervision given. These differences will be shown by the analysis of the preventive measures suggested. This analysis will be taken up next.

*The Preventive Measures Suggested.*

The study of the suggested preventive measures constitutes the final and perhaps the most important feature of the analysis. A statement as to the method of determining these measures is necessary. In a majority of cases the reporter in the camp described the method by which similar accident could be prevented in the future, and these, in turn, were classified according to the table given below. Where no such preventive measures were suggested but where the measure seemed obvious and unquestionable the classification was made by the writer. In doubtful cases where there might be some question as to the validity of the preventive measures the item was answered as "unknown" or "purely chance." An example of an accident with the preventive measure classified as "unknown" would be a sprained ankle received while playing baseball on a reasonably smooth diamond with regulation camp equipment. As the measures listed will show there has been no suggestion of the elimination of desirable camp activities. In a great many cases the answer "better care on the part of the individual" will be construed to mean "unknown" also, although in every case there would seem to have been no reason why the accident might not have been prevented. An example is the case of the boy who stepped in front of the horseshoe stake as his opponent had aimed with meticulous care and released the horseshoe the result being that the boy's head rather than the stake was the unexpected recipient of the shoe. Or again there was the case of the young lady counsellor who, upon receipt of a letter from home, or from some other source, began jumping up and down in excitement only, unfortunately, to sprain both ankles on what proved to be her final descent. Perhaps her shoe heels were unnecessarily high or the ground needlessly rough but the question was unanswered and the only remedial diagnosis the writer would dare would be the "more care" formula.

## TABLE XVIII

ACCIDENT PREVENTIVES—1929

FOR BOYS AND GIRLS, CAMPERS AND STAFF MEMBERS

| Preventives | Camper | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Equipment, etc.: | | | | | | | |
| 1. Leveling Paths | 14 | 21 | 35 | 1 | 7 | 8 | 43 |
| 2. Removal of Nails, Screens | 28 | 2 | 30 | .. | 2 | 2 | 32 |
| 3. Removal of Glass, etc. | 69 | 10 | 79 | 2 | 5 | 7 | 86 |
| 4. Building Proper Stairways | 5 | 3 | 8 | .. | 2 | 2 | 10 |
| 5. Cleaning out Swimming Area | 27 | 9 | 36 | 3 | 1 | 4 | 40 |
| 6. Miscellaneous | 0 | 150 | 150 | 0 | 0 | 0 | 150 |
| Total | 143 | 195 | 338 | 6 | 17 | 23 | 361 |
| Supervision: | | | | | | | |
| 10. In Kitchen, etc. | 8 | 1 | 9 | 0 | 0 | 0 | 9 |
| 11. At Dock | 31 | 12 | 43 | 3 | 1 | 4 | 47 |
| 12. At Athletic Fields | 24 | 4 | 28 | 1 | 2 | 3 | 31 |
| 13. At Cabins | 15 | 6 | 21 | 1 | 0 | 1 | 22 |
| 14. General | 45 | 4 | 49 | 2 | 3 | 5 | 54 |
| 15. At Playgrounds | 7 | 1 | 8 | 0 | 0 | 0 | 8 |
| 16. Camp Autos | 5 | 2 | 7 | 2 | 2 | 4 | 11 |
| Total | 135 | 30 | 165 | 9 | 8 | 17 | 182 |
| Proper Clothing, etc.: | | | | | | | |
| 30. Shoes | 44 | 17 | 61 | 4 | 1 | 5 | 66 |
| 31. Other Clothing | 7 | 7 | 14 | 2 | 1 | 3 | 17 |
| 32. Carry Flash-Lights | 1 | 5 | 6 | 2 | 2 | 4 | 10 |
| Total | 52 | 29 | 81 | 8 | 4 | 12 | 93 |
| Education: | | | | | | | |
| 25. In Use of Tools | 44 | 11 | 55 | 8 | 4 | 12 | 67 |
| 26. In Use of Axes | 20 | 9 | 29 | 1 | 2 | 3 | 32 |
| 27. Technique of Sport | 37 | 5 | 42 | 4 | 2 | 6 | 48 |
| 28. Care of Wounds | 81 | 22 | 103 | 7 | 6 | 13 | 116 |
| 29. Riding Technique | 7 | 16 | 23 | 2 | 2 | 4 | 27 |
| 24. Knowledge of Woodcraft | 43 | 56 | 99 | 8 | 4 | 12 | 111 |
| | 232 | 119 | 351 | 30 | 20 | 50 | 401 |
| Miscellaneous: | | | | | | | |
| 41. Individual Care | 148 | 83 | 231 | 27 | 23 | 50 | 281 |
| 42. Purely Chance | 23 | 15 | 38 | 3 | 3 | 6 | 44 |
| Total | 171 | 98 | 269 | 30 | 26 | 56 | 325 |
| Unknown | 57 | 26 | 83 | 3 | 7 | 10 | 93 |
| Grand Total | 790 | 497 | 1287 | 86 | 82 | 168 | 1455 |

114 Camps—105,640 Camp Weeks

TABLE XIX

ACCIDENT PREVENTIVES—1929

FOR BOYS AND GIRLS, CAMPERS AND STAFF MEMBERS

BY PER CENTS

| Preventives | Camper | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | |
| Equipment, etc.: | | | | | | | |
| 1. Leveling Paths | 1.8 | 4.2 | 2.7 | 1.2 | 8.5 | 4.8 | 3.0 |
| 2. Removal of Nails, Screens | 3.6 | .4 | 2.3 | ... | 2.5 | 1.2 | 2.2 |
| 3. Removal of Glass, etc. | 8.7 | 2.0 | 6.2 | 2.3 | 6.1 | 4.1 | 5.9 |
| 4. Building Proper Stairways | .6 | .6 | .6 | ... | 2.4 | 1.2 | .7 |
| 5. Cleaning out Swimming Area | 3.4 | 1.8 | 2.8 | 3.5 | 1.2 | 2.4 | 2.7 |
| 6. Miscellaneous | 0.0 | 30.2 | 11.7 | | 0.0 | 0.0 | 10.3 |
| Total | 18.1 | 39.2 | 26.3 | 7.0 | 20.7 | 13.7 | 24.8 |
| Supervision: | | | | | | | |
| 10. In Kitchen, etc. | 1.0 | .2 | .7 | 0.0 | 0.0 | 0.0 | .6 |
| 11. At Dock | 3.9 | 2.5 | 3.3 | 3.4 | 1.2 | 2.4 | 3.2 |
| 12. At Athletic Fields | 3.0 | .9 | 2.2 | 1.2 | 2.4 | 1.8 | 2.1 |
| 13. At Cabins | 2.0 | 1.2 | 1.6 | 1.2 | 0.0 | .6 | 1.5 |
| 14. General | 5.7 | .8 | 3.8 | 2.3 | 3.7 | 2.9 | 3.7 |
| 15. At Playgrounds | .9 | .2 | .6 | 0.0 | 0.0 | 0.0 | .6 |
| 16. Camp Autos | .6 | .4 | .6 | 2.3 | 2.4 | 2.3 | .8 |
| Total | 17.1 | 6.1 | 12.8 | 10.4 | 9.7 | 10.0 | 12.5 |
| Proper Clothing, etc.: | | | | | | | |
| 30. Shoes | 5.6 | 3.4 | 4.7 | 4.7 | 1.2 | 3.0 | 4.5 |
| 31. Other Clothing | .9 | 1.4 | 1.1 | 2.3 | 2.5 | 1.8 | 1.2 |
| 32. Carry Flash-Lights | .1 | 1.0 | .5 | 2.3 | 1.2 | 2.4 | .7 |
| | 6.6 | 5.8 | 6.3 | 9.3 | 4.9 | 7.2 | 6.4 |
| Education: | | | | | | | |
| 25. In Use of Tools | 5.6 | 2.2 | 4.3 | 9.3 | 4.9 | 7.2 | 4.6 |
| 26. In Use of Axes | 2.5 | 1.8 | 2.3 | 1.1 | 2.5 | 1.8 | 2.2 |
| 27. Technique of Sport | 4.7 | 1.0 | 3.2 | 4.7 | 2.5 | 3.6 | 3.3 |
| 28. Care of Wounds | 10.3 | 4.5 | 8.0 | 8.2 | 7.4 | 7.7 | 8.0 |
| 29. Riding Technique | .9 | 3.2 | 1.8 | 2.3 | 2.4 | 2.3 | 1.9 |
| 24. Knowledge of Woodcraft | 5.4 | 11.3 | 7.7 | 9.3 | 4.9 | 7.2 | 7.6 |
| Total | 29.4 | 24.0 | 27.3 | 34.9 | 24.5 | 29.8 | 27.6 |
| Miscellaneous: | | | | | | | |
| 41. Individual Care | 18.7 | 16.7 | 18.0 | 31.4 | 28.1 | 29.7 | 19.3 |
| 42. Purely Chance | 2.9 | 3.0 | 2.9 | 3.5 | 3.6 | 3.6 | 3.0 |
| Total | 21.6 | 19.7 | 20.9 | 34.9 | 31.7 | 33.3 | 22.3 |
| Unknown | 7.2 | 5.2 | 6.4 | 3.5 | 8.5 | 6.0 | 6.4 |
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

114 Camps—105,640 Camp Weeks

A study of the data presented in the above table tends to confirm some of the previous suggestions. In the first place boys

suffer so many more injuries from broken glass, tin, nails and the like that it seems highly probable that boys' camps are less well cared for in these respects. Second, since the preventive measures grouped under the heading of improved supervision are checked four and one-half times as often for boys as for girls it would seem that boys either need more supervision or that they are given less. This confirms the temperamental differences suggested previously. Third, boys would seem to need particular instruction and supervision in the care of small wounds, girls would seem to need more education in the avoiding of poison ivy.

There is one other rather important fact which seems to stand out, unmistakably, from the above tables. It is that most of the accidents in the camps studied might have been prevented without taking from them any of the high points of adventure and educative activity which is sometimes considered the unique contribution camp life may make to those who participate in it. This conclusion is drawn from the fact that under the preventive headings, "clean up of property", which includes the removal of glass, nails and the like, "care of wounds" and "knowledge of woodcraft" which refers to knowledge of poison ivy in this case, are included 588, or approximately forty per cent of all the injuries reported. Certainly these measures could be put into practice without lessening the adventure elements of camping in the least. Most of the remaining injuries reported seem to be equally preventable.

*How Safe is a Camp?*

It is impossible, as far as the writer can see, to secure measures of the relative safety of life in and out of camp. The records kept by the camps for this study are so much more detailed and have been kept so much more closely than any of the records now available for home, vacation and playground conditions have been that there is no value in attempting to compare them. There are detailed accident data for school accidents but the standards of reporting have little in common. Schools report accidents as a rule only when the resulting injuries are so serious as to prevent children from attending school. Under such a standard a very large number of the camp accidents reported would not have been considered since the injuries would not have prevented children from attending school.

The inability to secure such comparative measures seems to the writer to be a matter of slight significance. It is far more important that we compare present standards within camps with standards which seem desirable and attainable.

*Summary of Factors Related to Accidents in Camps.*

There are indications that the chief factors related to accidents in the camps studied are: first, sex which may in turn be closely associated with occupational differences; second, there is the suggestion that girls' camps may be maintained in better physical condition from a safety standpoint and that the activities common in girls' camps are probably less hazardous. There would seem to be no occupations common in camps which are so hazardous that, with proper care, they cannot be made reasonably safe for campers. Those requiring more supervision and education than others would include wood cutting and wood gathering, horseback riding and hiking, particularly where poison ivy abounds. Many accidents occur in baseball and in the swimming area but most of these would seem to grow out of poor physical conditions even more than out of the nature of the occupation. The third factor seemingly related to accidents is the type of camp, the short term group showing somewhat more accidents. The two groups may differ in equipment in some cases, often in program, usually in the amount of supervision they give. It seems reasonable to suggest that the increased amount of staff supervision and the possibility that the physical conditions are better, from a safety standpoint, are probably responsible for the lower rate in the long term camps.

As far as can be determined from the data the factor of experience in camp seems to have little effect upon camp safety. Staff members, however, have fewer accidents than campers, particularly after the first week of camp.

*General Summary of Camp Safety Conditions.*

1. If the camps studied had had well selected sites and well built equipment, with both site and equipment adequately cared for twenty-five per cent of the accidents reported probably would not have occurred. The chief hazards in this connection are:

1. Unnecessarily rough main pathways.

2. Glass, tin, nails and the like in the buildings and around the grounds.
3. Improperly cleaned-out swimming areas.
4. Inadequate stairways and railings.

2. If the camps studied could have eliminated the danger from poison ivy and insects, and could have properly cared for small cuts and scratches they would probably have eliminated twenty-six per cent of the injuries reported.

3. If the camps studied could have so supervised and educated campers in the use of axes and knives, in horseback riding, in the wearing of proper footwear when hiking, as to have prevented accidents therefrom they would have eliminated fourteen per cent of the accidents reported.

4. Of the remaining thirty-five per cent of accidents in the camps studied only eleven per cent seem, for practical purposes, not to have been preventable. The other twenty-four per cent could have been prevented only by the exercise of greater care and intelligence on the part of the injured individuals though over half of that number might have been prevented by adequate supervision.

*Problems in Camp Safety.*

The first problem in camp safety has to do with the physical conditions, the site and equipment and their care. The problem is to eliminate the accident hazards without turning camps into country hotels. In so far as it is possible this should be considered in the selection of the site, for in some camp sites the elimination of mosquitoes or the eradication of poison ivy, to use two examples, is almost impossible. After the site and equipment have been put in proper condition there is the immediate problem of maintaining them in this way, and many camps would not seem to be altogether successful in doing this.

This second problem arises from the fact that children are brought face to face with many new situations and experiences in camps, some of them offering unusual hazards. Sufficient education and supervision must be given, therefore, to enable campers to cope, successfully, with these new experiences. Swimming and boating, horseback riding, mountain climbing are three instances of this. It should be stressed that both education and supervision may be and usually are necessary.

# CHAPTER V

## Safety Conditions in Camps—1930. General Conclusion For the Two Years.

*The Plan of the Chapter.*

In the preceding chapter certain facts about safety conditions in camps have been presented and the conclusions drawn from these facts stated. This has been done with the implication, at least, that these facts and conditions are true for the camping movement generally and would tend to repeat themselves should a similar study be repeated. It is the purpose of this chapter to determine the degree to which these implications are true, the degree to which the facts and conclusions previously stated are found in a continuation of the study over a second year.

The following questions will be considered:

1. To what extent do the injury data for 1929 correspond with the data for 1930?
2. To what extent do the accidents in 1929 correspond to camp accidents in 1930?
3. To what extent are the factors related to camp accidents identical or similar for the two years?
4. To what extent are the same preventive measures indicated?
5. To what extent are the same general problems indicated?

In addition to these specific questions the chapter will include a discussion of three new topics, based on the total findings of the two years. There will be first, a statement as to the major hazards in camping; second, a discussion of the influence of the philosophy of safety of a camp on the education of its campers; third, a summary of the major problems in camp safety at present.

*Verification of Previous Results.*

In order to compare results over the two-year period it is necessary to reduce all figures to a common basis. The method chosen was to express all frequencies in relation to a fixed population unit. The unit selected was 1000 individuals remaining in camp for nine weeks. The 1000 individuals then would represent a total of 9000 camp weeks. To illustrate the method the total number of camp weeks reported by camps of one group was 60,720.

Dividing by nine we get the result 6,758, the number of individuals in these camps, had all persons remained for the full nine-week period. In the following table frequencies are expressed as rates per thousand individuals, 6,758 being, as stated, the number of individuals in the group mentioned.

The following table gives in the first two columns the injuries occurring in 1929 and 1930 respectively, in the second two the injury rate per thousand individuals for each year and in the last two columns the total injuries for the two years with the rate per thousand.

TABLE XX

ACCIDENTAL INJURIES IN SUMMER CAMPS—1929-1930

A COMPARISON OF INJURIES AND THE INJURY RATES FOR THE TWO YEARS

| Injury | Number | | Rate per 1000 | | Totals | |
|---|---|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 | Number | Rate per 1000 |
| Cuts and lacerations | 517 | 1,318 | 43 | 45 | 1,835 | 44 |
| Sprains | 237 | 474 | 19 | 16 | 711 | 17 |
| Bites and stings | 185 | 91 | 15 | 3 | 276 | 7 |
| Infections | 130 | 353 | 11 | 12 | 483 | 12 |
| Bruises, contusions | 106 | 333 | 9 | 12 | 439 | 11 |
| Poison ivy | 96 | 492 | 8 | 17 | 588 | 14 |
| Burns, sunburn | 69 | 310 | 6 | 11 | 379 | 9 |
| Fractures | 44 | 110 | 4 | 4 | 154 | 4 |
| Dislocations | 10 | 48 | 1 | 2 | 58 | 1 |
| Unclassified | 61 | 329 | 5 | 11 | 390 | 10 |
| | 1,455 | 3,858 | 121 | 133 | 5,313 | 129 |

| | 1929 | 1930 |
|---|---|---|
| 1. Fatalities: | | |
| Drowning (Heart Failure) | 1 | 0 |
| Burn (Kerosene) | 0 | 1 |
| Fall from Cliff | 0 | 1 |
| Struck by Lightning | 0 | 1 |
| 2. Loss of Time, Complete | 662 | 943 |
| Rate per 1000 | 55 | 32 |
| 3. Loss of Time, Partial | 5,729 | 8,051 |
| Rate per 1000 | 477 | 277 |
| 4. Sent Home | 6 | 45 |

1929—114 Camps—105,640 Camp Weeks
1930—503 Camps—266,265 Camp Weeks

The similarity of injury conditions for the two years seems to the writer to be very striking. Not only are the total injury frequencies very similar, a rate of 121 per thousand for 1929 and 133 for 1930, but there is a very marked likeness even in the kinds of injuries. The chief differences have to do with stings, poison ivy, burns and sunburn. Some seventy per cent of the bites and stings in 1929 were reported from one camp and though it was realized that their inclusions would give a somewhat atypical picture even so there was no reason for excluding them. The frequency rate of three per thousand in 1930 is exactly the rate for 1929 had the reports from this one camp been excluded. It seems safe to assume that the 1930 data are more typical in this respect.

There was a slight increase in the incidence of both poison ivy and sunburn during 1930. The majority of the cases of poison ivy were from four camps, all located in a district in which poison ivy is very bad. The selection of camps would influence the injury frequency here very decidedly.

There are no established reasons for the increased incidence of sunburns and burns so that the writer would have no way of predicting which figure is more likely to be typical for all camps over a period of years. 1930 was an unusually dry summer for most sections of the country and this may have accounted for some of the increase.

In the other injuries the similarities are greater than the writer would have dared expect. A comparison of the rate of injury for 1929 with the rate for the two years combined suggests that the findings of 1929 were exceedingly reliable in respect to the kinds and frequencies of illnesses occurring in summer camps.

Other details of the table should be mentioned. In the first place fatalities occurred from three new hazards in 1930, falls, kerosene burns and lightning. It is interesting to note that there were no cases of drowning among campers in the two years of the study. In fact the one fatality in the water was diagnosed as heart failure as previously stated.

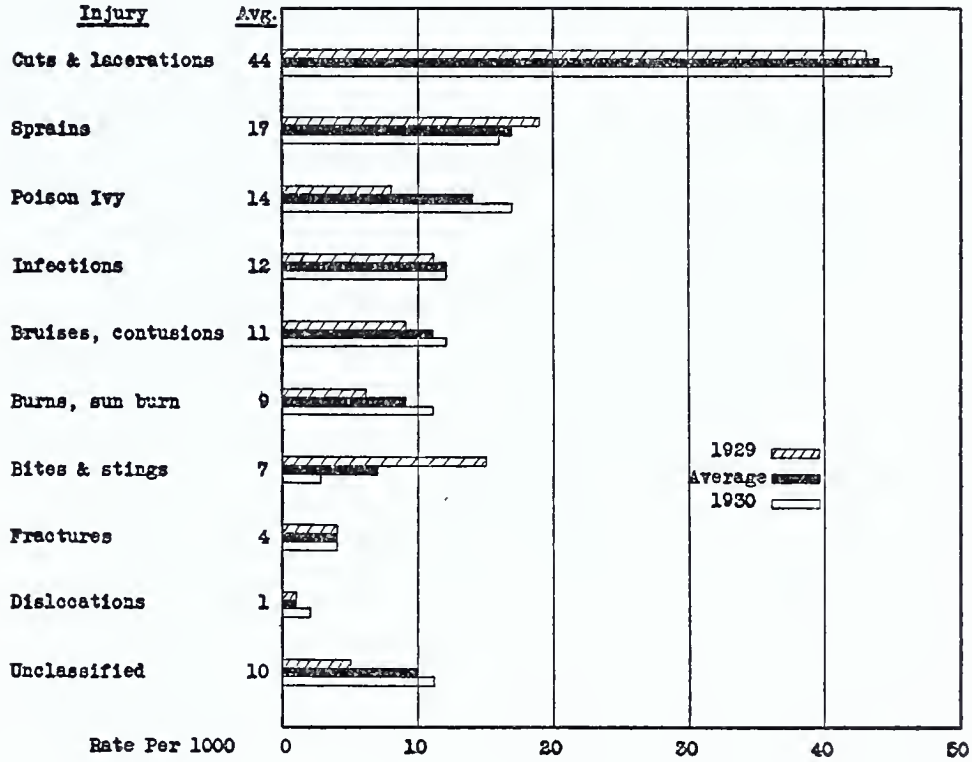
Next, at first glance the injuries seemed of less consequence, taking the comparison of time losses resulting from them, in 1930 than in 1929. The days in bed from accidental injuries were 55 per thousand in 1929 as compared with 32 in 1930. Similarly the rate of partial incapacity from accidental injury was 477 per thousand in 1929 as compared with 277 in 1930. This is offset

however by the fact that the rate of frequency for campers sent home as a result of accidental injury increased some 300 per cent in 1930. Had these more seriously injured persons been kept in camp we do not kown what influence it would have had on the comparison except that the difference would not have been so marked. In fact, it might possibly have been wiped out entirely.

The record for the two years is presented graphically in the chart below.

FIGURE 7

ACCIDENTAL INJURIES IN SUMMER CAMPS—1929-1930




1929 - 114 Camps - 105,640 Camp Weeks

1930 - 503 Camps - 286,265 Camp Weeks

When we consider the accidents from which the injuries occurred we find considerably more of a shift than was found with the injuries. Without seeming to wish to defend the reliability of the data for 1929 unduly it is the writer's opinion that much of

the shift is due to the diagnosis of reporters. This in turn may well have grown out of the introduction of the new report form in 1930. The shifts of importance had to do with falls, collisions and the group classified as "Unknown," or "Unclassified." Collisions include those with other persons, with fixed or with moving objects. In many cases falls do result from collisions, in which case the classification of the accident depends to a considerable extent on the reporter. It seems quite possible to the writer that the same kinds of accidents were happening even though they may have been classified somewhat differently.

As to the marked increase in accidents classified as "Unknown," or "Unclassified" the writer has little doubt but that this arose from the fact that the listing of this classification on the report blank rather invited its use. It is often easier to report an accident under this heading than it is to ferret out its real nature. In 1929 only eleven per cent of all accidents reported were classified as "Unknown," or "Purely Chance" by the reporters in the camps. It hardly seems likely that more than thirty-five per cent of the accidents occurring in 1930 would have been reported as unknown, as were reported, had this convenient classification not been provided. The table below indicates the similarity of accidents in the two years except as mentioned above.

TABLE XXI

ACCIDENTS IN SUMMER CAMPS—1929–1930

A COMPARISON OF THE ACCIDENTS AND THE ACCIDENT RATES FOR THE TWO YEARS

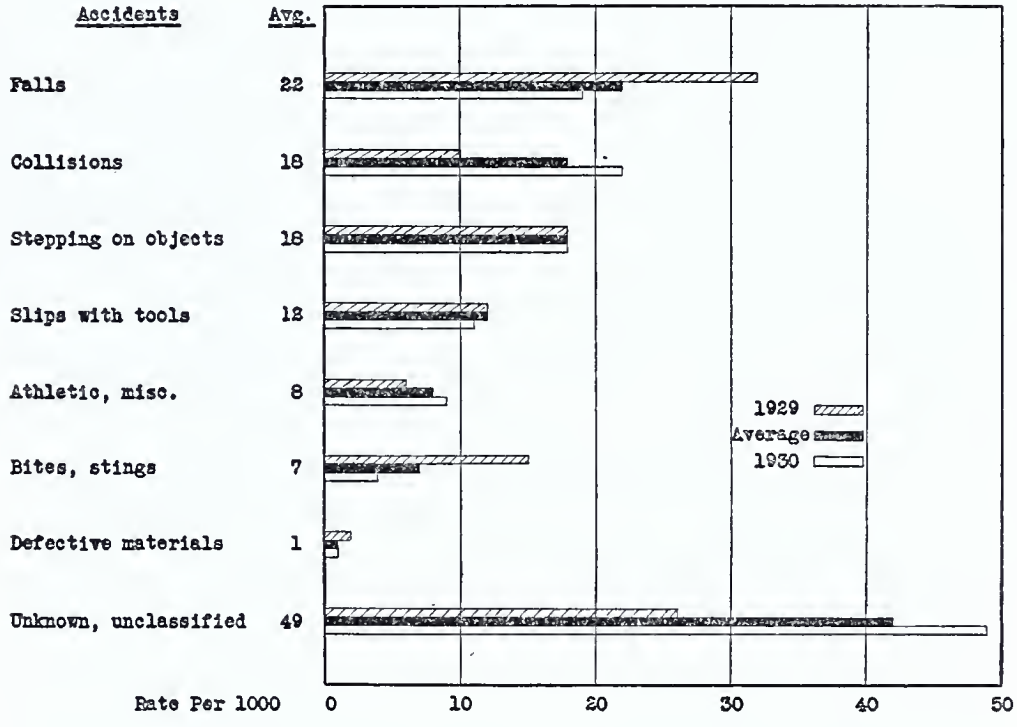
| Accident | Number | | Rate per 1000 | | Totals | |
|---|---|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 | Number | Rate per 1000 |
| Falls | 380 | 561 | 32 | 19 | 941 | 23 |
| Stepping on objects | 222 | 520 | 18 | 18 | 742 | 18 |
| Bites, Stings | 183 | 108 | 15 | 4 | 291 | 7 |
| Slips in using tools | 143 | 329 | 12 | 11 | 472 | 12 |
| Collisions | 124 | 633 | 10 | 22 | 757 | 18 |
| Athletic, miscellaneous | 73 | 260 | 6 | 9 | 333 | 8 |
| Defective materials | 20 | 33 | 2 | 1 | 53 | 1 |
| Miscellaneous | 101 | ... | .. | .. | ... | .. |
| Unknown | 209 | 1,414 | 26 | 49 | 1,724 | 42 |
| | 1,455 | 3,858 | 121 | 133 | 5,313 | 129 |

1929—114 Camps—105,640 Camp Weeks
1930—503 Camps—266,265 Camp Weeks

The same material is presented graphically in the accompanying chart.

FIGURE 8

ACCIDENTS IN SUMMER CAMPS—1929-1930




1929 - 114 Camps - 105,640 Camp Weeks

1930 - 503 Camps - 266,265 Camp Weeks

*The Factors Common to Accidents.*

The statement was made previously that three factors are related to accidents in camps, namely, sex, occupation and the type of camp, that is the long or the short term camps. The next step is to determine whether or not these factors are present in the data for 1930.

In order to save space the next table will give the rate of injury per thousand for boys and for girls for both 1929 and 1930

without listing the number of injuries for each year. The total injuries for the two years combined will be given, however, with the rate of injury per thousand.

TABLE XXII

A Comparison of the Injuries of Boys and Girls in Camps—1929–1930

| Injury | Rates per Thousand | | | | Totals | | | |
|---|---|---|---|---|---|---|---|---|
| | 1929 | | 1930 | | Number | | Rate per 1000 | |
| | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls |
| Cuts | 70 | 19 | 66 | 19 | 1,348 | 284 | 67 | 19 |
| Poison Ivy | 6 | 11 | 18 | 20 | 279 | 264 | 14 | 18 |
| Sprains | 15 | 24 | 14 | 15 | 290 | 265 | 15 | 17 |
| Infections | 15 | 7 | 18 | 6 | 334 | 90 | 17 | 6 |
| Bruises | 12 | 6 | 14 | 7 | 276 | 99 | 14 | 7 |
| Burns, sunburn | 7 | 3 | 14 | 5 | 240 | 71 | 12 | 5 |
| Bites | 5 | 35 | 3 | 4 | 70 | 195 | 3 | 13 |
| Fractures | 6 | 2 | 4 | 3 | 93 | 38 | 5 | 3 |
| Dislocations | 1 | 1 | 2 | 2 | 29 | 17 | 1 | 1 |
| Other | 7 | 3 | 15 | 6 | 261 | 82 | 13 | 5 |
| | 144 | 111 | 168 | 87 | 3,238 | 1,405 | 161 | 94 |

Total Camp Weeks—Boys—20,093
Total Camp Weeks—Girls—14,886

The table indicates that the similarities in differences are very great, almost the only exception being caused by the abnormally large number of bites and stings reported by one girls' camp in 1929. The difference in accidental injury frequencies between boys and girls is even more pronounced in 1930 than in 1929, however, as shown by the ratio of 144 to 111 in 1929 as compared with 168 to 87 for 1930. The differences would have been even more similar but for the one camp reporting stings in 1929 as noted above.

The data with reference to accidents bear out the same conclusions. The sex differences indicated for 1929 are present in 1930 to an even more marked degree. The only differences of importance are found in connection with the stings as noted above. The rate per thousand for 1929, for 1930 and the composite figures for the two years are given below.

TABLE XXIII

A Comparison of the Accidents of Boys and Girls in Camps—1929–1930

| Accident | Rates per Thousand | | | | Totals | | | |
|---|---|---|---|---|---|---|---|---|
| | 1929 | | 1930 | | Number | | Rate per 1000 | |
| | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls |
| Falls | 37 | 29 | 22 | 15 | 521 | 291 | 26 | 19 |
| Stepping on objects | 30 | 8 | 26 | 8 | 546 | 116 | 27 | 8 |
| Collisions | 15 | 7 | 30 | 10 | 526 | 133 | 26 | 9 |
| Slips with tools | 14 | 9 | 17 | 4 | 319 | 85 | 16 | 6 |
| Bites, stings | 3 | 35 | 4 | 4 | 76 | 199 | 4 | 13 |
| Athletics, misc. | 10 | 1 | 10 | 5 | 208 | 55 | 10 | 4 |
| Defective materials | 2 | 1 | 1 | 1 | 28 | 10 | 1 | 1 |
| Unclassified and unknown | 33 | 21 | 58 | 40 | 1,014 | 516 | 51 | 34 |
| | 144 | 111 | 168 | 87 | 3,238 | 1,405 | 161 | 94 |

Total Camp Weeks—Boys—20,093
Total Camp Weeks—Girls—14,886

Occupational differences show up in 1930 very similarly to those found in 1929. There are rather interesting differences in the occupations when injured between boys and girls however. The data indicating these differences will be given as well as the composite figures for the two years combined.

TABLE XXIV

Occupations when Injured, 1929–1930, for Boys and Girls Separately

| | Total Number | | Rate per 1000 | | Totals | |
|---|---|---|---|---|---|---|
| | Boys | Girls | Boys | Girls | Number | Rate per 1000 |
| Swimming | 455 | 167 | 23 | 11 | 622 | 18 |
| Baseball | 288 | 39 | 14 | 3 | 327 | 9 |
| Hiking | 201 | 96 | 10 | 6 | 297 | 8 |
| Recreation | 358 | 92 | 18 | 6 | 450 | 13 |
| Shop arts | 237 | 52 | 7 | 3 | 289 | 8 |
| Fatigue | 177 | 42 | 9 | 3 | 219 | 6 |
| Walking and hiking | 661 | 447 | 33 | 30 | 1,108 | 32 |
| Unclassified and unknown | 861 | 470 | 43 | 31 | 1,331 | 38 |
| | 3,238 | 1,405 | 157 | 93 | 4,643 | 132 |

Number of Camps—617
Total Camp Weeks—34,979

A rather interesting side light on occupational differences is secured by combining the accident frequencies for swimming, baseball, hiking, general recreations, fatigue duties and shop and art work for boys and girls and comparing them. For these activities the frequencies are as follows:

| | *Rate per Thousand* |
|---|---|
| Boys | 81 |
| Girls | 32 |

Under the groups Walking or Running along paths and Unclassified the figures are:

| | *Rate per Thousand* |
|---|---|
| Boys | 76 |
| Girls | 61 |

Boys are injured while carrying on the more common activities found in camps it would seem while the injuries of girls are received at other times. Whether this means that boys carry on more activities cannot be determined from accident statistics of course even though this reason might possibly be advanced to account for the differences.

*Age and Camp Safety.*

The data were not available in 1929 to determine the relationship between age and accidents in camps. Fortunately it is available for 1930 and is given in the table below. It would seem that age makes no difference in the accident rate between the ages of 8 and 15. There may be real differences below and above those ages, although the data become rather unreliable in the younger age group.

TABLE XXV

THE AGES OF CAMPERS INJURED—1930

| Age | Number of Campers | Number of Accidents | Rate per Thousand |
|---|---|---|---|
| Under 6 years | 206 | 1 | 5 |
| 6 years old | 217 | 4 | 20 |
| 7 years old | 417 | 14 | 33 |
| 8 years old | 970 | 43 | 44 |
| 9 years old | 2,086 | 98 | 47 |
| 10 years old | 4,433 | 162 | 37 |
| 11 years old | 5,892 | 205 | 35 |
| 12 years old | 11,131 | 511 | 46 |
| 13 years old | 11,225 | 497 | 44 |
| 14 years old | 9,545 | 515 | 54 |
| 15 years old | 7,868 | 333 | 42 |
| 16 years old | 5,507 | 174 | 32 |
| Over 16 years | 6,395 | 157 | 25 |
| Unknown | .... | 167 | .. |
| | 65,892 | 2,881 | |

The table is based on information supplied by 335 Camps.
It excludes 475 Poison Ivy cases for which the age of the injured was not available.

*The Prevention of Camp Accidents.*

The final question to be asked has to do with the agreement of the preventive methods suggested. As would be expected from the foregoing the same agreement is to be found here. The differences arise from the fact that so large a number of the accidents were classified as "Unknown" in 1930. It is the writer's opinion that the increase under this heading and the consequent decrease under the others grows out of the condition previously discussed. The report blank made it too easy to answer the item in this way.

TABLE XXVI

ACCIDENT PREVENTIVES—1929-1930

| Preventives | Number | | Rate per 1000 | |
|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 |
| Physical improvements | 338 | 641 | 34 | 26 |
| Education | 351 | 649 | 35 | 26 |
| Improved supervision | 246 | 149 | 25 | 6 |
| Unknown and miscellaneous | 352 | 1,927 | 35 | 76 |
| | 1,287 | 3,366 | 129 | 134 |

The extension of the study confirms the conclusions previously drawn as to the methods of improving camp safety conditions. The first thing needed is an improvement of the general physical conditions within the camp. The second need is specific education to prepare campers for new experiences for which they have had no preparation. Third, more expert supervision can be given in some phases of the camp program. Fourth, the large number of accidents for which no obvious preventive method was reported suggests the need of a more careful analysis of accident causes and methods of prevention on the part of the reporters in the camps.

## GENERAL CONCLUSIONS FOR THE TWO YEARS

*Major Hazards in Camp.*

The writer's experience in the two years of the study and the data secured suggest three areas of camp life which are likely to be particularly dangerous. They are the dangers of water

accidents, the dangers attendant to hikes and mountain trips and the dangers arising in the use of kerosene, gasoline and other explosive and combustible materials. Each is sufficiently important to receive some discussion.

The danger of water accidents is well known and has received, unquestionably, more publicity and attention than any other single problem of camping. It may be pointed out that there were actually no drownings among campers in the two years of the study. This is of course true but it would be entirely misleading to deduce from this fact that the dangers attendant to water sports are not present at all times. There are two reasons for the failure of the data to point out these dangers more conclusively.

First, it should be realized that injury statistics tend to cover up swimming accidents and hazards, for even a near drowning would not be reported unless the shock attendant to it were sufficiently severe to send the individual to bed. In 1929 there were five near drownings reported in addition to the one fatality. It should be remembered, also, that for these five reported cases there may have been scores of others in which campers were assisted or rescued by life guards but from which the shock was not sufficient for reports of them to be made. In the summer of 1930 the writer was rather careful to observe swimming periods in the first twenty camps he visited. In these twenty camps he saw personally three such near drownings, none of which are reported as accidental injuries.

Second, a large percentage of the better camps have worked out for themselves reasonably efficient water front supervision. The skill with which this is done, due in a large measure to the American Red Cross and other organizations, tends to cover up the extent of the hazard in accidental injury reports.

It should be realized, however, that the dangers attendant to boating and swimming with groups of children are constant and large and that the price of safety in this regard is skillful and careful supervision.

In the second place particular attention should be called to the dangers connected with hiking trips. One fatality occurred from a fall on such a trip in 1930 and several of the more serious injuries in both 1929 and 1930 were received on such trips. The writer would be seriously misunderstood if the above statement is

interpreted as an argument against such trips, for it is not so meant in any degree. Its purpose is to call attention to the necessity for most expert supervision for them.

In the third place we should be constantly alert to the dangers attendant to the use of kerosene, gasoline and other explosive materials. One camper was burned to death as a result of a kerosene fire and two others in two different fires were so badly burned they were confined to hospitals for almost a month each. In another camp which happened not to be participating in the study still another camper was burned to death as a result of a gasoline fire. Still other serious burns from these causes could be named, none as serious as these however.

There would seem to be several reasons for these. In the first place urban children may grow up without contact with either kerosene or gasoline and as a result have little comprehension of their explosive powers. In the second place there are seldom safe and convenient methods for transferring fuel to lamps or lanterns in the ordinary camp. Often lamps are filled after dark in unlighted buildings with little method provided for campers to distinguish between kerosene and gasoline. These are but invitations to disaster. In the third place campers tend to use kerosene rather frequently in the building of fires, as uncamplike as this may sound to the uninitiated, and too often it is used rather carelessly.

*Safety Education in Camps.*

It would be logical to proceed at this point with a discussion of the major problems in camp safety as indicated by the two-year investigation. Before doing this, however, it is necessary to discuss briefly present practices in safety education in camps. Objective data on this point are difficult to secure but a brief consideration of it is necessary in order to formulate the major problems.

The first impression of a casual observer might well be that there is little or no safety education, per se, in the ordinary summer camp. In reality this would be a rather superficial observation for safety education of a kind is undoubtedly present in almost every camp. A word as to the meaning of the term is perhaps necessary.

Under this rather self-conscious title safety education is one

of the newest of the accepted newcomers in educational circles. As a matter of fact, however, it undoubtedly has a more ancient lineage in our racial folkways, our primitive education, than has reading or writing or any of the other common school subjects. In the beginning education was safety education to a very large degree. Furthermore all educational content tends to revert to safety education in times of rapid change and when the life of the individual becomes fraught with new and real dangers. As an illustration it is only necessary to recall what a large part of the education of a soldier in war time is safety education, broadly defined.

Camping presents a somewhat analogous situation in that urban children coming to a camp find themselves in an entirely different surrounding and are forced to meet new experiences, many of which may be inherently dangerous. If this statement be true we would expect then to find much safety education in the camp, and so we do. The safety methods we find, however, tend all too often to achieve their ends by programs of supervision and prohibitions. Swimming may be dangerous so we permit children in camps to swim only when we can watch them so closely that no harm can come to them. Hiking may be dangerous so we prohibit children from leaving the camp property. This kind of education, if it can be called education, is undoubtedly of value. It does save lives but the price at which they are saved must be considered.

The cheapest education is that which makes itself progressively unnecessary as soon as possible; which makes the persons educated capable of carrying on under their own direction. This kind of education is undoubtedly rare at best in any field but, even so, the writer would like to advance the thesis that it is this kind of safety education at which we should aim in camp. It is his opinion after two summers of observation, however, that this kind of education is being achieved only rarely in our camps at present. Camps are reasonably successful in saving lives but it is entirely possible that the price they are paying is excessively high.

In raising this point it is necessary to carry the discussion back one or two additional steps, back into the fundamental aims and purposes of camps themselves. The reason should be evident. We need some criterion by which we may evaluate and criticize the methods of safety education in camps and this cannot be set up unless we know the aims of the safety education. These cannot be

determined except by measuring them in terms of the aims of the camp itself. This procedure may seem both difficult and unscientific and it undoubtedly tends to be. Even so nothing could be more truly unscientific than the accumulation of tables and graphs about safety conditions in camps without relating them to the purposes for which the camps have come into existence.

There are two concepts of the purposes of a camp. One is that a camp is something of a public nursing institution operated for some sort of profit or remuneration. Such camps may differ from ordinary commercial institutions in a variety of ways but they have one thing, at least, in common with them. They exist for some purpose other than the education, the growth, of the children who come to them. It would be unfair to suggest that this growth is not desired in most cases but if either education or profit must be sacrificed the profits are ordinarily maintained. Safety for these camps, then, will be on precisely the same basis it is in commercial institutions—it will be a protective measure for the camp itself. In this case the easiest way to secure it is, undoubtedly, by a program of rigid supervision and prohibition. Furthermore, there can be little objection to such a program, for it does not violate or infringe upon, in any way, the basic aim of the camp itself.

There is another concept of a camp, however. It is that a camp exists first and foremost for the education of the children who come to it, and the standard of success of a camp of this type is the growth of its children. The question of safety may lie as near the heart of such a camp as in the case of the other type but there will be one rather fundamental difference. It must save lives but at the same time must make the processes contribute to the lives of the children saved. It must make them more capable of meeting successfully the next situation that arises. It must really educate the children or the camp fails of the reason for its existence for in such a camp the mere conservation of life alone is not sufficient. A program of safety consisting of rigid supervision and prohibition will not be sufficient for this camp unless supervision and prohibition are the processes from and by which education comes. Modern psychology denies this assumption.

This rather extended and philosophical discussion can be summed up by saying that the way by which safety is secured must be as important as the safety itself for those camps whose aim is the education of their children. The aim of the program of safety

having to do with water sports should presumably be not merely to make swimming and canoeing at the camp itself safe, but so to teach children to swim and canoe that they will come to need less and less supervision and eventually as adults be able to swim and canoe with safety under their own direction. The water front safety program should therefore be judged by this double standard. There are times when the safety of the child rather than the educative value of the experience is the pressing and immediate need. Such situations are however the exceptional rather than the routine ones.

It must be evident from the above discussion that the safety philosophy of a camp will play a large part in the selection of the program activities for which it makes provision. This policy is undoubtedly wise if practiced within limits. If carried to extremes it means that, in the name of safety, a camp may rule out those activities which are implicitly adventurous or which have real possibilities for adventure. If this becomes true the resulting situation, to the writer, is unfortunate.

There are people so fortunate, vocationally and otherwise, that they find in life all the adventures they would ask. There seems to be a considerable feeling on the part of many people, however, that such persons are rare, are the exception rather than the rule. People who spend their days in offices or factories, their free afternoons in sitting in grandstands, their evenings in turning radio dials, receive most of their adventures in synthetic form. If this is undesirable, if in children it is not conducive to the finest development, as the writer in his limited knowledge is inclined to believe, then camps have a rather golden opportunity at present to make a most vital contribution to our educational order. If they are to make this contribution, however, they must be conscious of their responsibility for providing adventure for their children as well as safety. They must be as alert to conserve every activity that makes for good adventure as they are to eliminate those that make for undesirable consequences.

This, then, in the writer's opinion, is the philosophy upon which we must build our programs of safety in camps. It is against such criteria as the following that we must measure the methods we devise. First, will these methods actually achieve safety? Second, will they make for intelligent self dependence on the part of our campers? Third, will they make for real adventure?

*Major Problems in Camp Safety.*

It will be evident that the philosophy of safety one holds will influence his statement of major problems. If safety for the sake of safety alone be the purpose then the statement of problems will reflect this. If educative values be held rather high this too will affect the statement of major problems.

It is stated in the summary of the preceding chapter that the camps studied in 1929 might have eliminated some twenty-five (25%) per cent of the accidental injuries reported by caring for the physical conditions adequately, removing glass, nails, tins and the like, leveling paths, cleaning out swimming areas and the like. An additional twenty-five (25%) per cent would probably have been eliminated in this group by the elimination of poison ivy and insects and by the prevention of infection of small cuts, scratches and the like. Some fifteen (15%) per cent might have been eliminated by sufficient education in the use of knives and tools, in horse back riding and the like.

The major problems were stated as being, first, the clean up and care for physical conditions in the camp; second, the education of campers for new experiences they were not otherwise capable of meeting successfully.

The accident data for 1930 on the whole confirm the summary quoted and the statement of problems. Even so, the increase in the number of accidents for which no apt preventive method was listed was very marked. For this and other reasons the writer feels that more stress should be placed on the educational aspect of the problem of safety in camps than was done in the preceding chapter. A boy may step on a nail in a loose board on the shop floor and puncture his foot. The problem would seem to be a most obvious illustration of the need for cleaning up the shop floor and this might be checked as the way to prevent the accident. It is also true, however, that ten other boys may have stepped over the nail before one stepped on it. His own carelessness may have been a factor in the accident. He may have been barefooted whereas had he been wearing shoes no injury would have resulted, so that the preventive method might be to have all boys wear shoes in the shop. Certainly this might be as easy to accomplish as to prevent nails from being dropped. The illustration is cited to bear out the point that personal factors are involved in most accidents in addition to the sheerly physical conditions. Since this is true any

program of safety education which pays attention to the physical conditions and neglects personal factors must be doomed to incomplete success.

We must pay due attention to the physical conditions in camps which make for accidents. We must pay attention to personal factors. We must bear in mind the educational influence and value of the methods we devise. These, then, are the major problems in camp safety:

1. The problem of maintaining such physical conditions in camps that accidents from this source may be reduced or eliminated.
2. The problem of so preparing campers for the new and hazardous activities of the camp life that they may meet them with safety and success.
3. The problem of building a program of safety which is really effective without sacrificing the adventure, the education, for which the better camps exist.

# CHAPTER VI

## HEALTH CONDITIONS IN CAMPS—1929

As the plan for gathering the accident data was being developed it became evident that some study of the general physical conditions of camps would be helpful. This seemed to involve some study of sanitary conditions, and this being decided the very obvious thing to do was to study health conditions also. The report card on page 12 was worked out, the chief emphasis in terms of space being given to the statement of the preventive measures. As in the case of the accident reports this question was answered very completely in many cases and omitted in others. As would be expected some camps kept the records, on the whole, with the most meticulous care while others returned only bare outlines of the information desired.

The illnesses reported were classified according to the International List of the Causes of Death,[1] as this would permit more comparative studies, should they be desired, than would any home made classification. The chief difficulty in the Code classifications is that it lists sore throat, tonsilitis and pharyngitis as diseases of the digestive system. It seemed probable to the writer that it would more nearly represent the intent of the reporters' diagnoses to classify them with the respiratory group of diseases, thus leaving the diseases of the digestive system to represent stomach and intestinal disorders only. In the tabulations, therefore, these diseases are classified with the respiratory group.

The first thing needed, as in the accident study, is a general picture of the kinds and frequencies of illnesses occurring in the group. This is given in the table below which gives the number of cases of each kind of illness reported and the percentage each represents of the total.

This first table gives several rather interesting results. In the first place the camps reported 536 or approximately thirty-eight (38%) per cent more illnesses than accidents. Of itself this fact is difficult to interpret for while the ratio of accidents to illnesses is considerable higher than would be found in many occupational groups perhaps this is to be expected in a camp situation. We have found that most of the accidents reported could have been prevented

[1] Bureau of Census—Department of Commerce: Based on the Second Decennial Revision by the International Commission: July 13, 1909: Paris.

TABLE XXVII

ILLNESS IN 114 SUMMER CAMPS—1929
105,640 CAMP WEEKS

| General Diseases | Number | | Percent | |
|---|---|---|---|---|
| Contagious: | | | | |
| Influenza | 211 | | 10.6 | |
| Others | 72 | 283 | 3.6 | 14.2 |
| Non-Contagious | 83 | 83 | 4.2 | 4.2 |
| Nervous System: | | | | |
| Ear Infections | 106 | | 5.3 | |
| Eye Infections | 131 | | 6.6 | |
| Meningitis | 6 | | .3 | |
| Others | 3 | 246 | .2 | 12.4 |
| Circulatory: | | | | |
| Blood System | 6 | | .30 | |
| Lymph System | 16 | 22 | .80 | 1.10 |
| Respiratory: | | | | |
| Colds | 210 | | 10.6 | |
| Sore Throat | 111 | | 5.6 | |
| Tonsillitis | 54 | | 2.7 | |
| Pharyngitis | 65 | | 3.3 | |
| Pneumonia | 5 | | .3 | |
| Others | 59 | 504 | 3.0 | 25.5 |
| Digestive: | | | | |
| Indigestion | 205 | | 10.34 | |
| Gastritis | 74 | | 3.71 | |
| Appendicitis | 23 | | 1.2 | |
| Others | 123 | 425 | 6.2 | 21.4 |
| Genito-Urinary | 14 | 14 | .70 | .70 |
| Skin: | | | | |
| Furuncle | 90 | | 4.5 | |
| Impetigo | 60 | | 3.0 | |
| Others | 72 | 222 | 3.6 | 11.1 |
| Bones: | | | | |
| Sinusitis | 21 | | 1.1 | |
| Others | 12 | 33 | .60 | 1.7 |
| External: | | | | |
| Poison Ivy | 44 | | 2.2 | |
| Serum Sickness | 36 | | 1.8 | |
| Others | 39 | 119 | 2.0 | 6.0 |
| Unclassified | 40 | 40 | 2.0 | 2.0 |
| Total | 1991 | 1991 | 100. | 100. |

Illness Fatalities—2 (Spinal Meningitis)
Sent Home—83
Loss of Time—in Bed—3,083 days
Loss of Time—Partial—6,018
Ratio of Illnesses to Camp weeks—1 to 53
Average time loss per illness—Complete—1½ days
Partial—3 days

by comparatively simple measures which might suggest that the accident rate may have been rather high. All in all it would seem necessary to analyze the illnesses and the related factors before attempting such general conclusions.

A second interesting fact is that the digestive and respiratory diseases comprise forty-six (46%) per cent of the total illnesses reported. Many people have more or less assumed that about the only illnesses occurring in camps are stomach upsets and colds so that, as high as this percentage is when compared with the illnesses in other occupational groups, it is still lower than many had estimated before the results were tabulated. The next highest group of diseases are the general contagious diseases which represent fourteen (14%) per cent of the total.

There are a variety of factors which might be related to illnesses in camps, among them being status in camp, sex, weather or season, type of camp, the length of time the person has been in camp and various aspects of camp sanitation, food and water supply and the like. It is necessary then to take these up one by one to attempt to secure some measure of their influence on illness in summer camps. Taking the factors as listed we can phrase them as questions so that the first will be, what influence does being a camper or staff member have on illness in camps, or on the kinds and frequencies of illness an individual has? The following table supplies the answer to the question.

TABLE XXVIII

ILLNESS IN 114 SUMMER CAMPS—1929, FOR CAMPERS AND STAFF MEMBERS

| Illnesses | Campers | Staff Members | | Campers | Staff Members | |
|---|---|---|---|---|---|---|
| | Numbers | | | Per Cents | | |
| General: | | | | | | |
| Contagious | 243 | 40 | 283 | 14.0 | 16.0 | 14.2 |
| Non-Contagious | 72 | 11 | 83 | 4.1 | 4.4 | 4.2 |
| Nervous | 231 | 15 | 246 | 13.3 | 6.0 | 12.4 |
| Circulatory | 21 | 1 | 22 | 1.2 | .4 | 1.1 |
| Respiratory | 429 | 75 | 504 | 24.6 | 30.0 | 25.3 |
| Digestive | 368 | 57 | 425 | 21.1 | 22.8 | 21.4 |
| Genito-Urinary | 11 | 3 | 14 | .6 | 1.2 | .7 |
| Skin | 199 | 23 | 222 | 11.4 | 9.2 | 11.2 |
| Bones | 26 | 7 | 33 | 1.5 | 2.8 | 1.7 |
| External | 106 | 13 | 119 | 6.1 | 5.2 | 6.0 |
| Unclassified | 35 | 5 | 40 | 2.0 | 2.0 | 2.0 |
| Total | 1741 | 250 | 1991 | 100.0 | 100.0 | 100.0 |

We find that while the ratio of staff members to campers is one to five they have only one-seventh as many illnesses. In other words being a camper means that there is forty (40%) per cent greater probability of illness. The distribution of kinds of illnesses is remarkably similar so that it would seem that campers and staff members have the same kinds of illnesses but the campers have more of them. It is interesting to note that this is almost exactly the same difference that existed between the two groups with respect to accidents.

TABLE XXIX

A Comparison of Illness Ratios Between Campers and Staff Members—1929

| Camp Weeks | Illnesses | | Ratio |
|---|---|---|---|
| Male Campers | 48,762 | 928 | 1 to 53 |
| Female Campers | 39,176 | 813 | 1 to 49 |
| All Campers | 87,938 | 1,741 | 1 to 51 |
| Staff Members | 17,702 | 250 | 1 to 71 |

The second question we must answer is, what influence does being a boy or being a girl have on the kind and frequency of illnesses campers have? The table below gives data for both campers and staff members.

TABLE XXX

Illnesses in 114 Summer Camps—1929
Classified by Sex of Individuals

| Illnesses | Numbers | | | Per Cents | | |
|---|---|---|---|---|---|---|
| | Male | Female | Totals | Male | Female | Totals |
| General: | | | | | | |
| Contagious | 100 | 183 | 283 | 9.8 | 18.8 | 14.2 |
| Non-Contagious | 41 | 42 | 83 | 4.0 | 4.3 | 4.2 |
| Nervous | 187 | 59 | 246 | 18.4 | 6.1 | 12.4 |
| Circulatory | 13 | 9 | 22 | 1.3 | .9 | 1.1 |
| Respiratory | 251 | 253 | 504 | 24.7 | 26.0 | 25.3 |
| Digestive | 191 | 234 | 425 | 18.8 | 24.1 | 21.4 |
| Genito-Urinary | 2 | 12 | 14 | .2 | 1.2 | .7 |
| Skin | 142 | 80 | 222 | 13.9 | 8.2 | 11.2 |
| Bones | 16 | 17 | 33 | 1.6 | 1.8 | 1.7 |
| External | 58 | 61 | 119 | 5.7 | 6.3 | 6.0 |
| Unclassified | 17 | 23 | 40 | 1.7 | 2.4 | 2.0 |
| Total | 1018 | 973 | 1991 | 100.0 | 100.0 | 100.0 |

Here we find several important facts which begin to throw light on some of the preceding questions. In the first place males report almost the same number of illnesses as accidents, this being true both for campers and staff members while the female group report approximately one hundred (100%) per cent more illnesses than accidents, this percentage also holding true for both campers and staff members. This permits us to restate the relationship of accidents and illnesses in camps that boys have approximately the same number of illnesses and accidents, girls have twice as many illnesses as accidents.

Also there are quite important differences in the kinds of illnesses camp boys and girls have. Girls report almost twice as many major contagions among both campers and staff members while boys report almost four times as many eye and ear infections. Also boys report almost twice as many skin infections as girls. The distribution of respiratory diseases are very similar, while girls report more digestive illnesses.

Among staff members we find that men and women tend to have the same kinds of illness with the women having more of all of them. It is interesting to note, also, that menstrual disorders are responsible for an almost negligible percentage of the illnesses among both campers and staff members.

The differences in the distribution of contagious diseases is caused entirely by the large amount of influenza among the girl campers as with this excluded boy and girl campers reported exactly the same number of contagions. Contagious diseases were reported as follows:

TABLE XXXI

CONTAGIOUS DISEASES IN 114 CAMPS—1929

| Disease | Number | Percentage |
|---|---|---|
| Influenza | 211 | 75 |
| Mumps | 32 | 11 |
| Chicken Pox | 16 | 6 |
| Malaria | 10 | 4 |
| German Measles | 6 | 2 |
| Measles | 4 | 1 |
| Diptheria | 2 | ½ |
| Whooping Cough | 1 | ... |
| Scarlet Fever | 1 | ½ |
| | 283 | 100 |

In addition there were six cases of meningitis, two fatalities from this cause being the only ones reported.

Boys reported 105 cases of conjunctivitis against twelve (12) for girls, fifty-seven (57) ear infections against twenty-three (23) for girls. The preponderance in skin diseases was caused largely by the fact that boys reported forty-nine (49) cases of impetigo against seven (7) for girls with a slight increase of boils also.

To summarize the influence of sex on camp illness it would seem that boys are about as likely as girls to be ill and that probably half of the illnesses of each will be either digestive or respiratory diseases. With the exception of these diseases the boys will be more likely to have infections of eyes, skin or ears while the girls will be more likely to have one of the major contagions, particularly influenza. Among staff members however women may expect twice the illnesses men have, the two distributions being very similar.

*The Influence of Season on Camp Health.*

The next question to be answered is, what influence does the season or the date have upon camp illnesses, or when do camp illnesses occur? Now the obvious procedure here would be to tabulate the illnesses by weeks so that the illness curve for the season could be established, except for one factor sufficiently important that it might seriously influence the curve unless allowance be made for it. This factor is the length of time the individuals have been in camp. Before we can say that there are more illnesses in August for example we must know whether this means more illnesses to those who have just arrived in camp or to those who were there through July. Since campers vary in respect to the time spent in camp this fact must be allowed for. The reason for making this distinction is that it is generally admitted that a change of food, water, living conditions, climate is often accompanied by a temporary health disturbance. Also it has been taken for granted, stated over and over again in fact, that life in camp tends to build up health and physical resistance. Therefore if we are to measure the influence of season and of the time spent in camp these two factors must be separated. By comparing conditions in the long and short term camps it would seem possible to isolate the influence of each and get a relative measure of its weight. By computing the curve for the short term camps we can determine the influence of season

where campers remain for short periods only. By determining the rate and the curve in the long term camps we can get a measure of the influence of the season plus staying in camp for several weeks. In this way it would seem possible to determine the relative influence of the two.

The table and the rate for the short term group is given herewith. The figures represent the number of illnesses weekly for each 100 campers, computed for campers only.

TABLE XXXII

ILLNESSES PER WEEK FOR EACH 100 CAMPERS. SHORT TERM GROUP—1929

| Week of Camp | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Number in Camp.. | 11,663 | 11,663 | 11,663 | 10,135 | 6,443 | 6,213 | 3,652 | 3,652 | 3,652 |
| Illnesses..... | 141 | 114 | 150 | 122 | 207 | 117 | 79 | 41 | 36 |
| Rate per 100..... | 1.2 | 1.0 | 1.3 | 1.2 | 3.2 | 1.9 | 2.2 | 1.1 | 1.0 |
| By 3-week periods.. | ... | 3.5 | ... | 6.3 | ... | ... | 4.3 | ... | ... |

It is evident that the rate rises slightly until during the fifth week of camp it takes an abrupt jump to more than twice its highest point at any other time during the season. This is brought about partly because several more or less epidemics of contagious and respiratory diseases were reported during this particular week. The probability is that the curve in reality should be considerably smoothed out so that the peak is not so high. After this the rate declines for three weeks and rises somewhat during the ninth week. This would suggest that unless other factors not discovered are at work there seems to be a seasonal peak around August 1 but with this exception short term camps show no highly pronounced seasonal fluctuation. More evidence can be secured by making an analysis of the kinds of diseases which show the increased rate at mid-season if it seems desirable to make such an analysis after examining the frequency rate in the long term camps.

By August 1 campers will have been in camp for several weeks in the long term group and would be expected to have accumulated a great deal of physical vitality and resistance. If this is true they might then resist the influence of this seasonal peak, if such there be, and we would find the frequency rate rising not so sharply, or else not at all, and after mid-season we might find it receding even lower than the original rate. Here is the table.

TABLE XXXIII

ILLNESSES PER WEEK FOR EACH 100 CAMPERS. LONG TERM GROUP—1929

| Week of Camp | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Number in Camp | 5,864 | 5,864 | 5,864 | 5,783 | 3,583 | 3,140 | 2,161 | 2,161 | 2,161 |
| Illnesses | 55 | 126 | 124 | 104 | 96 | 75 | 77 | 74 | 39 |
| Rate per 100 | 1.0 | 1.9 | 2.1 | 1.9 | 2.7 | 2.5 | 3.5 | 3.4 | 2.0 |
| By 3-week periods | ... | 5.0 | ... | ... | 7.1 | ... | ... | 8.9 | ... |

To determine the statistical reliability of this difference in rates of illness these rates may be considered as per cents since they are based on the number of illnesses per one hundred individuals. Using the formula

$$\sigma_p = \sqrt{\frac{PQ}{n}}$$

the standard error of the per cent may be determined. Using these figures the formula

$$\sigma_{diff._{1-2}} = \sqrt{\frac{(PQ)_1}{n_1} + \frac{(PQ)_2}{n_2}}$$

can be used to determine the reliability of the differences.

The sigma of the differences in per cents between the first three weeks and the second is .003, between the second three weeks and the third .004. The differences are .021 and .018 respectively so that the difference between the first two periods is seven times its standard error, between the second and third periods four and one-half times its standard error. The differences then would seem to be real rather than chance.

The illness rate for the long term group starts somewhat lower than in the short term group, rises steadily until August 1 at which time it is still considerably lower than the rate in the short term group. This was what might be expected. From this point on, however, when the illness rate in the short term camps begins to decline, in the long term camps it begins to mount even more sharply than before until the peak is reached in the seventh and eighth weeks after which it again declines. The steadiness of this increase is best shown by comparing the results by three week groups, the second three weeks showing an illness increase of approximately forty (40%) per cent over the first three, and the third week group an increase of twenty-seven (27%) per cent over

the second. Thus the rate for the last three weeks is almost eighty (80%) per cent higher than the rate for the first three. In the short term group, on the other hand, we find an increase of twenty (20%) per cent, when comparing the last three weeks with the first three. Comparing four week periods in the long term group we find the last four weeks showing sixty (60%) per cent more illnesses than the first four. This increase is so steady as well as so large that we are forced to the conclusion that remaining in the camps of this group seems to increase rather than reduce the likelihood of illness.

The supposition stated, namely that remaining in camp should build up sufficient resistance to counteract what seemed to be a seasonal peak of illness does not seem to be true. The data suggest the possibility, on the contrary, that the seasonal influence, whatever it may be, is the lesser of the two, and that had campers in the short term group also remained through the season the illness rate would have increased steadily throughout the summer instead of declining for the last three weeks. There are two additional studies, at least, by which our hypotheses may be checked. First, one item on the report blanks gave the number of days the individual had been in camp before he became ill. The value of this information is not uniformly what we might like since we do not know the length of time each individual stayed in camp, but parts of it do throw much light on the problem.

We need particularly to get some information on the influence of the first few days in camp on illness and also on the last thirty days for those individuals who spent most of the season at camp. Fortunately the data do give this. To begin with, practically all campers remained in camp for at least three days, so that when we know the number of illnesses occurring to campers during this period we can be safe in assuming that this was based on the entire 37,392 individuals who were at the camps. Also most of them stayed as long as ten days as this is the minimum period campers are accepted in many of the short term group. A small percentage however may have left after one week so that if we know the number of illnesses occurring to individuals during their fourth to tenth days in camp we may assume that this is based on a population of almost this number although the figure would be somewhat

less since undoubtedly some persons stayed a shorter period. The figures for campers alone, not including staff members are:

| | Days one to three | Days four to ten |
|---|---|---|
| Number of Illnesses: Total | 267 | 427 |
| Number per day | 89 | 61 |

This would be at the rate of 89 daily during the first three days, 61 daily during the next seven days. The first three days show an increase then of almost fifty (50%) per cent over the next seven, which would seem quite conclusive evidence that the first three days are rather difficult ones from the health standpoint. A few of the illnesses come from sunburn in the first three days, it should be mentioned. These figures are still more evidence for the suggestion that an individual's previous time in camp seems to have far more influence on illness rate than any seasonal influences.

Unfortunately we do not know exactly the number of individuals who are in camp for longer than thirty days, but we are able to get a fairly satisfactory approximation of it. In the first place since most of the camps opened no earlier than July 1 the thirty days could not have expired until August 1. In the long term camps during August there were approximately 13,000 board weeks among the entire group, representing, after omitting staff members, approximately 11,000 campers weeks at the most. Of this number some did not stay for the full nine weeks so that there could hardly have been more than 10,000 board weeks among those campers with at least thirty days' camp experience. During this final thirty days, that is, during August, camps in the short term group reported some 19,000 board weeks. Let us assume that as many as one in six of these had been in camp for longer than thirty days, a very high percentage it would seem, in which case some 3,000 board weeks would be included in the group. 535 illnesses were reported to individuals who had been in camp for longer than thirty days on a total population of what would seem to be not more than 13,000 board weeks then. Now the total camper board weeks was 88,000 and for this group 1,734 illness returns were made. This then is the situation:

| | For Campers in Camp Thirty days or less | For Campers in Camp Over thirty days |
|---|---|---|
| Board weeks | 75,000 | 13,000 |
| Illnesses | 1,199 | 535 |
| Ratio | 1 to 65 | 1 to 25 |

Among campers during their first thirty days the illness ratio was one illness to each 65 weeks, which means of course one illness to each sixty-five individuals per week. During the time after thirty days the ratio was one to twenty-five. In other words if an individual stays for sixty days he would have two and one-half times the chances of being ill in the second thirty that he would in the first thirty. This is a truly startling figure, and even assuming that in the short term group one camper out of every four had been in camp as long as thirty days, which would increase the number in camp over thirty days from 13,000 to 15,000, even so the ratio would still be more than two to one.

One more question must be answered in connection with the length of time in camp in its relation to illness rates. Is the increase to be found among certain groups of the diseases or is it true of all of them? This can be determined by a table giving the number of illnesses per week in each of the major groups. The first table presents the conditions in the short term group.

TABLE XXXIV

WEEKLY FREQUENCY OF MAJOR GROUPS OF ILLNESSES. SHORT TERM GROUP

| Illness groups | Illnesses per 1,000 campers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Contagious | .4 | 1.0 | 1.0 | 2.4 | 8.0 | 4.2 | 1.8 | .8 | .0 |
| Nervous | 1.4 | 1.8 | 1.8 | 1.4 | 6.0 | 6.4 | 4.4 | .6 | 3.2 |
| Respiratory | 2.0 | 2.6 | 2.6 | 2.4 | 5.6 | 2.4 | 5.2 | 1.4 | 4.0 |
| Digestive | 2.0 | 2.0 | 4.0 | 2.6 | 5.0 | 3.0 | 3.2 | 4.2 | 1.6 |
| Skin | 1.8 | 1.2 | 1.6 | 1.6 | 1.4 | 2.0 | 4.6 | 2.8 | 1.6 |
| Others | 4.2 | 1.0 | 1.6 | 2.0 | 2.4 | 1.2 | 2.4 | 1.4 | .8 |
| | 11.8 | 9.6 | 12.6 | 10.4 | 32.4 | 19.4 | 21.6 | 11.2 | 11.2 |

| | By Three-Week Periods | | |
|---|---|---|---|
| Contagious | 2.4 | 14.6 | 2.6 |
| Nervous | 5.0 | 13.6 | 8.2 |
| Respiratory | 7.2 | 14.4 | 10.6 |
| Digestive | 8.0 | 10.6 | 9.0 |
| Others | 6.8 | 5.2 | 4.6 |
| Skin | 4.6 | 5.0 | 9.0 |
| | 34.0 | 63.0 | 44.0 |

The chief points of interest here are that the contagious pile up heavily during the middle three weeks, the diseases of the eyes and ears are most frequent during the fifth, sixth and seventh weeks and the peak of respiratory diseases seems to coincide with this. The digestive diseases tend to be more evenly distributed over the summer as are the skin diseases. Among the other diseases a comparatively large amount of sunburn in this group of camps was responsible for the high frequency during the first week. It is necessary to study the camps where individuals remain for the season to answer the question more fully.

TABLE XXXV

WEEKLY FREQUENCY OF MAJOR GROUPS OF ILLNESSES. LONG TERM GROUP ILLNESSES PER 1,000 CAMPERS

| Illnesses | Illnesses per 1,000 Campers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Contagious | .6 | 1.6 | 3.4 | 2.2 | 2.2 | 8.0 | 5.6 | 6.0 | .6 |
| Nervous | 1.2 | 1.6 | 3.6 | 3.2 | 3.4 | 3.6 | 3.6 | 14.0 | 3.0 |
| Respiratory | 1.8 | 4.6 | 7.0 | 6.0 | 6.6 | 9.2 | 10.2 | 6.0 | 3.0 |
| Digestive | 3.2 | 3.4 | 5.0 | 3.8 | 5.6 | 2.0 | 3.6 | 6.0 | 11.6 |
| Skin | 1.6 | 2.4 | 1.0 | 1.8 | 4.6 | 2.0 | 2.0 | 2.0 | .0 |
| Others | 1.2 | 2.8 | 1.2 | 1.6 | 4.2 | .6 | 2.8 | .4 | .0 |
| | 9.6 | 16.2 | 20.2 | 18.6 | 26.6 | 24.8 | 30.8 | 35.6 | 17.2 |

| | By Three-Week Periods | | |
|---|---|---|---|
| Contagious | 5.6 | 12.4 | 12.2 |
| Nervous | 6.4 | 9.6 | 19.6 |
| Respiratory | 13.4 | 21.8 | 23.4 |
| Digestive | 11.6 | 10.4 | 21.2 |
| Skin | 5.0 | 8.4 | 4.0 |
| Others | 5.2 | 6.4 | 3.2 |
| | 47.2 | 70.0 | 83.6 |

The more significant points of the table are as follows: First, contagious diseases cause the least trouble during the first three weeks but increase greatly during the last six weeks. Second, the eye and ear infections, classified as diseases of the nervous system, reach their peak during the last three weeks. Respiratory infections are lightest during the first three weeks but pile up during the weeks following. Fourth, digestive upsets and infection are almost twice as frequent during the last three weeks as for any

other period. Fifth, skin infections and the remaining diseases remain reasonably constant throughout the season.

It should be borne in mind that the four classes of illnesses which showed increases during the season in the long term group also showed increases during the middle three week period in the short term group. After that date, however, the diseases in the short term group showed a decline, the greatest drop being among contagious diseases. Since the camps are located in more or less the same districts some factor within the camps must be operating to cause these important differences in illness conditions. The question may be stated, "Why, in those camps where campers remain throughout the season, are there more contagious, respiratory, nervous and digestive diseases the longer the campers remain in camp?"

*The Control of Illnesses in Camps.*

Illnesses differ in one very significant aspect. There are some illnesses, some infections, against which the human organism is seldom able to build enough internal resistance to enable it to throw off the bacterial invaders. These illnesses comprise the group known as contagious diseases. There are other infections, however, against which the human organism can build sufficient resistance to protect itself under favorable condition. The digestive illnesses common to camps tend to be of this latter kind. Against the first type of disease the only protection we have is to avoid contact with the bacteria or to build up an artificial resistance which is possible by means of immunizations of various kinds. Against the second type of illness protection may be secured by accumulating a high enough level of vitality or health, and this vitality is influenced by various factors, the more important ones being adequate sleep, rest, freedom from worry, proper nutrition and the like.

It will be evident from the above that some types of diseases are related primarily to the general health of individuals, others, the contagious diseases, are not. Both kinds of diseases were found to increase throughout the season where campers remained in camp over a period of weeks. A study of the control of illnesses in camps must take into account two general problems, then. The first problem will have to do with the methods used by the camps to protect themselves against contagious diseases. This will involve the prevention of the entrance of contagions and infections into the camps

and their control in cases where they do develop. This includes the question of immunizations and the problem of the immediate detection of contagions if they do develop. The second problem will have to do with the building of the ability to throw off the non-contagious diseases, the building of vitality.

As to the first problem, the regulation of contagious diseases, there are a variety of ways by which they may be introduced. Campers may bring them in with them, either the obvious skin infections or the major contagions which may not develop for several days. Visitors may bring in infections. Campers may be infected on trips out of camp. Once in the camp, infections may be spread by personal contact, by the use of common articles of clothing or equipment, by inadequate sanitary facilities, infected swimming areas and the like. There are two problems involved, the prevention of the entrance of contagions and their control if they are brought in. These will be considered in detail.

There is a reasonable consensus of opinion as to the factors involved in the second problem, the building of health and vitality. As suggested above these factors include the standard of nutrition maintained, the amount of sleep provided, the guarding against excessive fatigue, the prevention of worry or prolonged emotional tension. While there may be other factors involved these are commonly considered the more important ones and are the ones to be considered in detail.

*A. The Control of Contagious Diseases.*

The first method in common use is the requirement of a physical examination before a child is admitted to camp. Of 131 camps reporting on the question of this pre-camp medical examination 124 reported it as being required. These examinations range from a highly casual interview with physicians, or in some cases physical directors, to a very careful and complete examination. Detailed health records are secured in a small percentage of cases. It would seem then that all of the camps, practically, are aware of the problem and doing what they can to meet it. It is not possible to get an evaluation of the use that is made of the information thus secured. In addition to the pre-camp examination most camps give examinations upon arrival or within the first week of camp, and the data for this is included also.

| | Number | Per Cent |
|---|---|---|
| Number of Camps Reporting | 131 | 100 |
| Pre-camp Examination | 124 | 94 |
| Re-examination in Camp: | | |
| First day | 34 | 26 |
| First week | 93 | 71 |
| None | 4 | 3 |
| | 131 | |

There are two other sources by which contagions are brought into camp. First, visitors, particularly younger children, may bring them in with them; second, campers may be infected on out of camp trips. There are no objective measures of the prevalence of infections from these sources so they can only be noted and considered in the formulation of any codes that may be developed.

In this connection should be mentioned the danger that food handlers and other employees may bring infections into camps. It is the rule to have all campers examined before camp—it seems almost to be the exception to have staff members examined. The danger of infection from food handlers is particularly great, and the detection of typhoid and other carriers requires a complete examination with laboratory analysis of stool and urine specimens. The camps reported as follows on food handlers examinations:

| | Number | Per Cent |
|---|---|---|
| Complete examination, urine and stool analysis | 31 | 22 |
| Physical examination only | 61 | 43 |
| No examination | 49 | 35 |
| | 141 | 100 |

It may or may not be significant that the long term group of camps showed a considerable poorer record in this connection than the short term group.

Infections may be brought into camp by sources other than individuals, that is through food, milk and water supplies. The danger of infected water has had a more general recognition than any similar one it would seem, as what legislation there is often centers around the supervision of water supplies, as will be shown later. In the reporting camps 129 report an analysis of drinking water while nine report no such analysis. In a majority of cases this analysis was made by the State Board of Health in the state in

which the camp was located. In almost no instance was more than one analysis made which raises several fundamental questions regarding the safeguarding of water supplies. First, most analyses are made before or at the beginning of camp so that if infection from the camp itself occurs it may not be detected by the one analysis. Second, and growing out of the first, infection of water may occur after the analysis and the camp have no means of discovering it. As far as can be told very few camps or State Boards of Health make careful sanitary surveys of the water system, a procedure which would seem to be as necessary as a single water analysis.

In regard to the safeguarding of milk supplies it is also possible to secure information as to the ways camps attempt to solve the problem. The question regarding the source of milk supplies gave the following data:

| | Number | Per Cent |
|---|---|---|
| Number using pasteurized milk | 91 | 65 |
| Number using milk from tuberculin tested herds | 38 | 27 |
| Number using raw milk from untested herds | 12 | 8 |
| | 141 | 100 |

Once again the camps seem very much aware of the problem and are making effort to meet it.

There is no information as to other food supplies.

*The Control and Spread of Contagions Within the Camp.*

The factors more directly related to the problem are the measures for the immediate detection of infections and for the protection of others in camp from them, by isolation and other measures, and second, the adequacy of the methods for disposing of sewage and garbage.

A very limited number of the camps of the group take the temperature of campers daily for the first two weeks after their arrival in camp. Obviously in the short term group this would mean that temperatures would have to be taken daily throughout the season as most of the campers remain no longer than two weeks. A majority of camps, however, depend on the cooperation of the camper and the cabin leader in reporting all indispositions and

infections to the camp physician as soon as they are noticed. How successful the camps are in this can be estimated by the study of the preventive methods a little later.

Most camps in the group studied have infirmaries or first aid stations but few of them have adequate facilities for the isolation of contagions.

One hundred camps in the group report State inspection of their sewage and garbage disposal systems, all of which either had satisfactory systems or were able to make them confirm to standard by minor changes. Thirty (30) of the camps report no such inspection but some of them did make inspections of their own, either by the camp physician, the director or both. It is so impossible to rate sewage and garbage disposal systems except by personal inspection that it seemed wise to attempt no evaluation of conditions other than the above. The reporting group, it might be recalled, represents the upper level of camps, at least the better known camps, so there is the possibility that many others may be receiving little inspection along this line.

In 136 camps eighty-five (85) report bubbler systems for the distribution of drinking water with fifty-one (51) reporting systems using individual paper cups or a common drinking cup. While a bubbler system may not be the only satisfactory manner of handling the problem of distributing drinking water, it is a desirable one which has much to recommend it. Over half the camps make no provision for tooth washing facilities, eighty-seven of a total of 138 report basins or similar facilities for the washing of hands and faces and seventy-two report shower or tub baths.

The data concerning the various programs of immunization required were not wholly satisfactory. It seems that a large percentage of camps require satisfactory smallpox vaccination but only a very few require more than this. Innoculation against typhoid fever is almost never required nor is the requirement of a satisfactory Schick test common. On the whole camps fall in line with the requirements of the public school systems of their district, or at least this would seem to be the tendency.

An estimate of the success of camps in the prevention and control of contagious diseases may be secured from the preventive methods suggested by the camp reporters themselves. This will be taken up after the discussion concerning the building of vitality in camps.

B. *The Building of Physical Vitality.*

There has been a tendency to assume, among both parents and camp leaders, that the mere fact that a child is in camp is proof sufficient that his health is being benefited, his physical stamina and vitality increased. Since the data indicate either that exposure to infection increases or that resistance decreases the longer a child stays in camp, it is now necessary to analyze the chief factors which are assumed to influence bodily vitality and resistance to infection. If in camps campers are subjected to inadequate standards of nutrition, to prolonged loss of sleep, or to prolonged physical and nervous strain, then we would expect that the longer individuals remain in camp the more would their vitality be reduced and their resistance to infection lowered. In fact, any one of the above might result in reduced vitality and if they should all be combined the result would be somewhat inevitable.

The logical procedure is, perhaps, to set up the desirable and accepted standards covering each of the above and to measure camp conditions against these standards. Unfortunately it is exceedingly difficult to establish ideal standards or to measure camp conditions for any one since the three factors are so related, so knit together, that the one can hardly be separated from the other two. The amount of food necessary to supply the bodily energy needed depends quite obviously on the amount of energy that is needed, and this in turn depends, among other things, on the amount of exercise and the amount of sleep. Also, in turn, the amount of sleep required depends to a considerable degree, is at least influenced, by the amount of exercise taken. We have, however, no objective measures of either physical or mental work and strain. Our ideal standards, therefore, would have to be set up for an individual and would vary from individual to individual with a variety of factors as age, weight and others. This very difficulty, this very fact, however, namely that individuals differ in their needs, may supply the first explanations of the decrease in resistance if such does prove to exist.

There is a very decided tendency in camps to regiment the life of the individuals so completely that little attention can be given to individual needs. First, in regard to food, there is a very common practice of arranging table groups on the basis of age and of serving equal proportions of food to each table so that a group

of sixteen year old boys will receive the same amount of food as a group of eleven year olds. Also in many camps there is a general tendency to discourage the servings of "seconds," no recognition being taken of the fact that the older group actually needs more food. As to sleep, in most camps every one goes to bed and arises at the same time. Ordinarily there will be a camp fire or some other activity, lasting until taps, and this is quite often followed by a cabin group meeting, vesper service or something of this type, which forces every cabin member to remain awake. Campers who are sleepy have the greatest of difficulty in going to sleep early. In most camps there is even less option offered campers as to when they shall arise. One follows the path of wisdom and arises with dignity and under one's own motive power, so to speak, at reveille, or one may be indiscreet and risk rising even more suddenly, though equally successfully, a very few minutes after reveille. There is undoubtedly more option as to the amount of exercise individuals take but even here in a great many camps there is a decided public sentiment to spur one on even after the point of fatigue has been reached. In particular the leading athletes and those active in other things are often held in the grip of competitions of various sorts and seldom are really free to remain out of activities even though they prefer to do so.

It is not possible to estimate with any accuracy the amount of worry and nervous strain that accumulates in the modern, highly organized summer camp but in the opinion of the writer it is very great indeed for many campers. In many camps there is, first of all, a never ending rush. One must hurry to finish inspections in time to get to meals on time so that games or classes may start on time and so it continues in an endless round. Second, there is the never ending strain of being jammed together in a group, six to ten persons living in a fourteen by sixteen space, it being the rule rather than the exception that some one in the group is more or less disliked. Most experienced directors know that Counsellors must have relief, must have time to get away from the group, or they would break under the strain. It may be that the strain is far greater for the campers than we usually realize. In home life we shift so steadily from school and play groups to the comparative isolation of the home that the monotony and the strain of being constantly with one group is continually being relieved. Such is

not the case in camps and while the writer is not attempting to say that such friction and strain always exist in camp, we should nevertheless bear in mind that it may exist. Third, there is in many camps the spur of some kind of competition that rakes an individual from the time he awakens until he drops off to sleep. Cabins compete for inspection honors, teams compete for cups, individuals compete for awards and prizes. Some individuals are so protected from this by laziness and indifference that they escape all harm from it while others come to the end of camp in a state of complete physical and nervous exhaustion. The first factor, then, which may be reducing resistance is that most camps fail to make adequate provision for differentiation between individuals.

Assuming that individuals will not all conform to any set patterns in their needs let us continue, however, by examining some of the prevalent general conditions. Since we were able to get a more objective measure of the amounts of sleep needed by children and the amounts they seem to be getting in camp these data will be presented next.

*Sleep in Camps.*

It seemed highly desirable to know the amount of sleep children are receiving in camps so on the closing report Directors were requested to give their scheduled time allotted to sleep. It was recognized that there might be a large variation between the amount of sleep scheduled and the amount children actually secured but this at least seemed a first step. This was secured and is presented in the table below.

It is not enough, however, to know how much sleep is scheduled on a program. We need to know how much campers actually do sleep. Accordingly the writer spent the first four weeks of the camp season in 1930 making a personal observation of sleeping conditions in twenty-one camps, selected more or less at random. The procedure was first to get the schedule of activities in order to discover the sleep scheduled, then to get accurately the time at which the sleeping call was given, and finally to remain in the cabin areas until the camp actually seemed asleep. This last is a bit difficult to secure accurately but the observer assumed that when the lights were out and all conversation had ceased that most of the cabin or tent members really were asleep. This seemed a fair

measure since in almost every case some persons were asleep before this time while others were still awake after this.

These twenty-one camps scheduled an average of nine hours, twenty minutes for sleep, and the camps were actually quiet and seemed to be asleep an average of twenty-six minutes after the scheduled time. In two of these camps the age range was from two to twelve years and the median age for the entire group was approximately twelve years.

Along with the data are presented the amounts of sleep recommended by pediatricians. The first two columns are taken from Terman's "Hygiene of the School Child."[1] The first column is the median amount of sleep recommended by ten well known pediatricians.

The second column represents the amounts of sleep 2,692 American school children actually get under good conditions, as reported by Terman.[2]

The third column is taken from Dr. Max Seham's "Investigation of the health habits of 500 children in perfect health and living under normal conditions."[3] The tables follow.

TABLE XXXVI

Comparison of Amount of Sleep Needed by Children with the Sleeping Schedules of Camps

| Age | Recommended (Terman) | Actual (Terman) | Actual (Seham) |
|---|---|---|---|
| 6 | .... | .... | 12 |
| 7 | 11 | 10.4 | 12 |
| 8 | 11 | 10.4 | 11.5 |
| 9 | 11 | 10.1 | 11 |
| 10 | 10.5 | 9.6 | 11 |
| 11 | 10.3 | 10 | 10.5 |
| 12 | 10 | 9.4 | 10 |
| 13 | 9.8 | 9.3 | 9.5 |
| 14 | 9.3 | 9.1 | 9.5 |
| 15 | 9 | 8.5 | 9.5 |
| 16 | 8.8 | 8.3 | .... |
| 17 | 8.8 | 8.5 | .... |
| 18 | 8.5 | 8.5 | .... |

[1] Terman, L. N.: *The Hygiene of the School Child.* Houghton, Mifflin: 1914: p. 364.

[2] Terman Op. Cit.: page 367.

[3] Seham and Seham. *The Tired Child.* Lippincott (1926) : page 281.

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| Hours of Sleep Scheduled | Number of camps | |
|---|---|---|
| 8 | 10 | Average hours of scheduled sleep—9.5 |
| 8.5 | 5 | |
| 9 | 38 | Average time after scheduled sleeping call before |
| 9.5 | 38 | campers actually were asleep— |
| 10 | 37 | |
| 10.5 | 8 | Twenty-one camps—1930—26 minutes |
| 11 | 5 | |

The thirteen camps which scheduled more than ten hours of sleep all had children under twelve years of age. When the sleeping schedules are tabulated according to the long and short term classification the sleep scheduled for the long term camps proves to be nine hours, forty-five minutes, for the short term group nine hours, twenty minutes. If we allow from twenty-five to thirty minutes for the variation between schedule and actual practice we find that the camps in the short term group actually sleep slightly less than nine hours and those in the long term group about nine hours, fifteen minutes. It seems then to be true unquestionably that many campers do not receive as much sleep as is recommended, and in many cases the loss is probably very severe, amounting to as much as two hours daily in some cases. This statement is based on the fact that ten camps scheduled only eight hours of sleep although all of them had some campers as young as twelve years old.

The writer also observed rest hour period in twenty-three camps in July, 1930, and found the following conditions:

| | Number of Camps |
|---|---|
| No rest hour scheduled | 3 |
| Rest Hour observed as follows: | |
| 1. Sleep or complete relaxation | 3 |
| 2. In bunks, but reading or writing permitted | 2 |
| 3. Confined to cabin area | 7 |
| 4. Only a scheduled break in formal activities, canteen usually open | 6 |
| 5. Seemingly no attention | 2 |
| Total | 23 |

It should be pointed out that children in camps are living a more strenuous life, on the whole, than were the groups for whom the preceding sleeping standards were determined, so that they would probably need more sleep and rest than the standards quoted. It seems to the writer that the rest hour period may balance or make up for this more strenuous life but from conditions observed it is difficult to see how it could be expected to do more than this.

There are other factors which tend to influence the amount of sleep children secure at camp. It is rather common experience and observation that we have to learn to sleep out of doors. Canvas bunks are very different from comfortable mattresses, at least for a few days. In most camps children are scheduled to arise from one to three hours after daybreak, and we have to learn to get used to the light. At times some campers do not have sufficient blankets to sleep warmly. In many camps campers are expected to take an overnight hike weekly or at longer intervals and it is common experience that inexperienced hikers tend to sleep less on hikes than they ordinarily do.

Terman stresses the probability that there are qualitative factors connected with sleep, as well as quantitative, and if this is true the above conditions would seem to suggest that sleep in camp may not always be of the most satisfying kind. Terman sums up his study with the following statements:[1]

> "As regards the school child, in all probability, the wisest course is for us to make the conditions such that the child will sleep as many hours per day as he wants to sleep. We should avoid either abbreviating or unduly prolonging the sleep beyond this standard. Liberal allowances also should be made for individual differences. There are probably physiological idiosyncracies which make nine hours of sleep for one child equivalent to eleven hours for another."

When all factors are considered there seems sufficient reason for suggesting the possibility that in many camps today children are being seriously drained of sleep. Certainly it would seem to be true unquestionably that the sleep needs of the individual child are not the basis upon which the schedule to which he must conform is based.

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[1] Terman, L. N. Op. Cit.: page 372.

*Standards of Nutrition in Camps.*

To secure an accurate measure of the standards of nutrition in camp would require among other things detailed weighing of the amounts of food used and of the waste. Obviously it was quite impossible to secure this for any large number of camps, as very few of them have such records themselves, and this is not, primarily, a study in nutrition. Copies of menus were secured from a great many camps and while it is recognized that this alone gives little index to nutrition standards, even so it is quite evident that many of them vary greatly from the dietary standards set up by recognized dieticians. Dr. F. C. Gephart of St. Paul's School, Concord, New Hampshire, discovered[1] that boys of fourteen to sixteen years in a boarding school environment seemed to need as much as 5,000 calories per day and probably life in camp is even more strenuous than boarding school life. This certainly raises the question as to whether many camps are not failing to provide a sufficient quantity of food, particularly for its older campers. We have more or less tended to criticize camp menus from the standpoint of balance of foods rather than quantity whereas both perhaps should have been studied.

Not being able to secure accurate data concerning the kinds and amounts of food served there was the alternate suggestion of attempting to secure some direct index of the nutritional status of campers. The measure most commonly used in the past to determine this has been the height-weight-age relationship. The procedure was to compare the height-weight-age of an individual with a standard derived by taking the averages of these measures for a large number of individuals, the assumption being that this average was the desirable standard by which all individuals should be measured. The recent studies of Dr. Raymond Franzen[2] as to the validity of the height-weight-age relationship as an index of nutritional status indicates that this is not a satisfactory measure, and the American Child Health Association recommends that it no longer be used for this purpose.[3]

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[1] F. C. Gephart. Report of a Dietary Study of St. Paul's School, Concord, New Hampshire. *Boston Medical and Surgical Journal.* Volume 17, pp. 17-22. 1927.

[2] *Physical Measures of Growth and Nutrition.* Raymond Franzen, Ph.D. School Health Research Monograph Number II, American Child Health Association. 1929. 138 pp.

[3] The Weighing and Measuring of School Children. Anne Whitney. *Child Health Bulletin,* March, 1930. American Child Health Association. Page 41.

As an index of nutritional status, then it did not seem desirable to use measures of weight, even though these could be secured, which in itself was doubtful. It is a common occurrence for children to make large and rapid increases in weight, within a few weeks after returning from camp but again the interpretation of this fact, even if it could be established for a large number of cases, would be very difficult.

Regarding the nutritional needs of children in camp there has been, as far as the writer can discover, no attempt to set up dietary standards, nor to calculate dietary needs, based specifically on the program of activities common to children's camps. Many of the routine activities require a very high energy expenditure per hour, according to the following calculations as quoted by Dr. Mary Swartz Rose.[1]

TABLE XXXVII

ENERGY EXPENDITURE PER HOUR UNDER DIFFERENT CONDITIONS OF MUSCULAR ACTIVITY. (ROSE.)

| | Man (Per Pound) | Woman (Per Pound) |
|---|---|---|
| Sleeping | 0.43 | 0.40 |
| Sitting quietly | 0.65 | 0.60 |
| Dressing and undressing | 0.77 | 0.71 |
| Sweeping bare floor (38 strokes per minute) | 1.09 | 1.02 |
| "Light exercise" | 1.10 | 1.02 |
| Walking slowly (2.6 miles per hour) | 1.30 | 1.21 |
| Carpentry, metal working, industrial printing | 1.56 | 1.45 |
| "Active exercise" | 1.88 | 1.75 |
| Walking moderately fast (3.75 miles per hour) | 1.95 | 1.81 |
| Swimming | 3.25 | 3.02 |
| Running (5.3 miles per hour) | 3.70 | 3.44 |
| Walking very fast (5.3 miles per hour) | 4.22 | 3.92 |

To go still further in an attempt to secure an approximation of energy requirements in camp, Dr. Rose states:[2]

> "A normal boy, five years old, 42 inches high, should weigh 41 pounds or 18.6 kilograms, and will require at least 80 calories per kilogram, making a total per day of 1488 calories. With more than ordinary activity, as much as 90 calories per day

[1] *A Laboratory Handbook for Dieteties.* Mary Swartz Rose, Ph.D. Third Edition. McMillan. 1929. 269 pp. Table IV—Page 17.

[2] Ibid. Page 18.

per kilogram may be required, a total of 1674 calories per day. . . . Standards for children should in general be considered as representing the minimum rather than the maximum food requirement."

Dr. Rose then gives a table showing the average energy requirements of children, the requirement for a five year old boy being given as from 1300-1600 calories. The top figure here is still almost five per cent lower than the amount just calculated as needed for a five year old boy doing more than average activity. If we assume that for more than ordinary activity we should add an additional five per cent to the calory requirements as stated in the remainder of the table then we find the requirements ranging from 3150 to 4200 for boys from twelve to sixteen, these being minimum requirements according to the statement above. For girls of the same ages the requirement would run from 3150 to 3565 calories. When the energy requirements of counsellors are averaged with these it is evident that, for a camp as a whole, a high calory allowance would seem to be needed.

In twenty-nine camps visited during the 1930 season three had dieticians in the camp. One was using a measured calory allowance of 3500 calories with a camper age range of from nine to fourteen, the campers being boys. One dietician was not measuring food but stated that "girls need 2100 calories daily." In the third camp there was an estimated calory allowance of 3100 calories, this also being a girl's camp with an age range from nine to sixteen. In a fourth camp with boys ranging from twelve to sixteen the menus had been prepared by a non-resident dietician who had assumed a calory allowance of from 3100 to 3200. The point is not that this amount of food only was being given but that these allowances quoted represent the opinion of the dieticians as to the amount of food needed. It would suggest, to the writer at least, that dieticians and other persons responsible for dietary standards in camps need to take into account the energy requirements demanded by a strenuous camp life.

Tables giving the energy requirements and the distribution of food classes are given as calculated by Dr. Rose. Where dietary standards in camps fall below these standards it would seem safe to assume that children are being under fed or improperly fed.

## TABLE XXXVIII

AVERAGE TOTAL ENERGY REQUIREMENTS OF CHILDREN BASED ON AVERAGE WEIGHTS (ROSE)

| Age, Years | Calories per Day | |
|---|---|---|
| | Boys | Girls |
| 3 | 1100–1400 | 1050–1350 |
| 4 | 1200–1500 | 1150–1400 |
| 5 | 1300–1600 | 1200–1500 |
| 6 | 1500–1900 | 1450–1800 |
| 7 | 1600–2100 | 1500–1900 |
| 8 | 1700–2300 | 1600–2200 |
| 9 | 1900–2500 | 1800–2500 |
| 10 | 2100–2700 | 1900–2600 |
| 11 | 2100–2800 | 2000–2800 |
| 12 | 2300–3000 | 2100–3000 |
| 13 | 2500–3500 | 2300–3400 |
| 14 | 2600–3800 | 2400–3000 |
| 15 | 2700–4000 | 2400–2800 |
| 16 | 2700–4000 | 2200–2800 |

*A Laboratory Manual for Dieticians.* Mary Swartz Rose, Ph.D. Third Edition. McMillan 1929. P. 19.

## TABLE XXXIX

DISTRIBUTION OF KINDS OF FOOD NEEDED (ROSE)

| Age | Per Cent of Total Calories from Each Class of Food | | | | | |
|---|---|---|---|---|---|---|
| | Food from Cereal Grains | Milk | Vegetables and Fruits | Fats | Sugar | Eggs, Cheese, Meat and other Flesh |
| 6– 7 years | 20–25 | 40–45 | 14–15 | 10–12 | 3–4 | 4–5 |
| 8– 9 years | 20–25 | 38–42 | 15–16 | 12–13 | 4–6 | 5–6 |
| 10–12 years | 20–25 | 34–38 | 17–18 | 13–14 | 6–8 | 7–8 |

| (13–18 Years) | Per Cent of Total Calories from Each Class of Food | | | | | |
|---|---|---|---|---|---|---|
| Calory Requirement | Food from Cereal Grains | Milk | Vegetables and Fruits | Fats | Sugar | Eggs, Cheese, Meat and other Flesh Foods |
| 2000 | 16–18 | 30–33 | 18–20 | 15–16 | 10 | 10 |
| 2500 | 18–20 | 24–25 | 18–20 | 16–18 | 10 | 10 |
| 3000 | 20–22 | 22–23 | 18–20 | 16–18 | 10 | 10 |
| 3500 | 24–25 | 18–20 | 17–18 | 17–18 | 10 | 10 |
| 4000 | 25–26 | 16–18 | 16–17 | 17–18 | 10–12 | 10–11 |
| 5000 | 27–28 | 15–16 | 16–17 | 17–18 | 10–12 | 11–12 |

*A Laboratory Manual for Dieticians.* Mary Swartz Rose, Ph.D. Third Edition. McMillan 1929. Pp. 30, 31.

*Exercise and Overstrain in Camps.*

Of the three factors affecting physical health and vitality this is the most difficult to treat objectively. The danger of over-organization of camp programs and the exhaustion of campers has been commented on by many visitors to camps. Competitive athletic leagues differ so much in the intensity with which they are conducted that a yes or no answer as to whether camps have competitive leagues really has little meaning. Furthermore, the one activity in which loss of sleep, exhaustion, poorly chosen and prepared food often reach a culmination is the overnight hike. Without questioning in any way the whole group of educative values which properly conducted hikes may offer we should, nevertheless, not blind ourselves to that fact that a poorly conducted one may exhaust those who take it for days. And few camp staffs are crowded with expert hike leaders. The situation is that the danger of overactivity is quite generally recognized but that we have no objective methods for measuring the amount of it that does exist.

*Summary of Factors.*

A summary, then, of the question as to whether camps are building physical vitality and resistance would include the following points. First, although individual health needs differ, most camps subject all individuals to the same general routine which means that some may suffer therefrom. Second, we find that in the camps of the group a majority of the children probably are not getting as much sleep as they need, this shortage seeming, at times, to be very serious. Third, it is altogether possible that some camps do not give enough, or the right kinds, of food, any shortage in quantity probably being most severe among the older campers. Fourth, it is altogether possible that many campers come to the close of a camp season in a state of physical and nervous exhaustion as a result of prolonged and almost unbroken strenuous activity. These facts being true it seems reasonable to assume that in many cases life in camp may decrease rather than build up physical vitality and resistance. If this be true it would seem to explain at least in part why we find the illness rate increasing the longer children remain in camp.

*Analysis of Preventive Measures.*

The analysis of the preventive measures suggested by the camp physicians has been left, purposely, until the last so that it might serve as something of a check on the suggestions and conclusions above. The method of arriving at the measures was the same as that described in connection with the accident study. On the whole the question was left blank more often than in the previous study and even greater caution was exercised by the writer in answering the question as "Unknown" where there was room for any reasonable doubt as to the justification of an answer. The result is that in some thirty-two (32%) per cent of the cases the preventive measure was classified as unknown. It came on the whole from diseases of a simpler nature in the respiratory and digestive groups, with a small number of ear infections being classified in this manner also. Most of the cases would seem to be connected very definitely with the physical condition of the individual so that with sufficient vitality most of the individuals would have thrown off the infections in this group. Preventive measures are classified according to male and female groupings and also by the long and short term camp grouping.

TABLE XL

ILLNESS PREVENTIVES—1929

CLASSIFIED BY STATUS IN CAMP AND SEX OF INDIVIDUALS

| Preventives | Campers | | | Staff | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | Boys | Girls | Total | Men | Women | Total | |
| 1. Pre-camp treatments: | | | | | | | |
| Tonsillectomy | 22 | 16 | 38 | 3 | 4 | 7 | 45 |
| Others | 29 | 27 | 56 | 2 | 3 | 5 | 61 |
| 2. Adequate dietary standards | 83 | 123 | 206 | 10 | 30 | 40 | 246 |
| 3. Care of ears | 44 | 19 | 63 | 2 | 8 | 10 | 73 |
| 4. Care of eyes | 11 | 6 | 17 | .. | .. | .. | 17 |
| 5. Regulation of exposure | 72 | 22 | 94 | 3 | 5 | 8 | 102 |
| 6. Adequate rest | 19 | 40 | 59 | 5 | 14 | 19 | 78 |
| 7. Prevention of entrance of contagions | 21 | 51 | 72 | .. | 2 | 2 | 74 |
| 8. Control of contagions within camp | 171 | 224 | 395 | 12 | 43 | 55 | 450 |
| 9. Sunburn | 37 | 17 | 54 | 7 | 5 | 12 | 66 |
| 10. Greater bodily cleanliness | 79 | 39 | 118 | 5 | 5 | 10 | 128 |
| 11. Unknown | 340 | 229 | 569 | 37 | 45 | 82 | 651 |
| Total | 928 | 813 | 1741 | 86 | 164 | 250 | 1991 |

The chief problems in illness prevention among girls center very definitely around the prevention and control of major contagions, mostly influenza in this case; and around the eating habits and food. This is the more unexpected in view of the fact that a very large percentage of the girls' camps reported having dieticians on their staffs. It is altogether possible, of course, that some menstrual disorders were reported in this group although this was guarded against as much as possible. While the two problems above represent the centers of illness prevention among boys, also, to them should be added the problem of the regulation of exposure, too rapid chilling and the like, the problem of preventing ear infections and the problem of skin diseases and other infections which are directly connected with bodily cleanliness.

In view of the differences in illness conditions found between the long and short term camps an analysis was made of the differences in the remedial measures suggested for these two groups. The data indicate very similar measures except for two items as shown by the table.

TABLE XLI

ILLNESS PREVENTIVES—1929

CLASSIFIED BY LONG AND SHORT TERM CAMPS

| Preventives | Long Term | | | Short Term | | | Per Cents | |
|---|---|---|---|---|---|---|---|---|
| | Camper | Staff | Total | Camper | Staff | Total | Long | Short |
| 1. Pre-camp treatments: | | | | | | | | |
| Tonsillectomy | 13 | 2 | 15 | 25 | 5 | 30 | 3 | 4 |
| Others | 21 | 3 | 24 | 35 | 2 | 37 | 2 | 3 |
| 2. Adequate dietary standards | 110 | 25 | 135 | 97 | 15 | 112 | 16 | 11 |
| 3. Care of ears | 15 | 4 | 19 | 48 | 6 | 54 | 2 | 5 |
| 4. Care of eyes | 8 | .. | 8 | 9 | .. | 9 | 1 | 1 |
| 5. Regulation of exposure | 43 | 6 | 49 | 51 | 2 | 53 | 6 | 5 |
| 6. Adequate rest | 28 | 7 | 35 | 31 | 12 | 43 | 4 | 4 |
| 7. Prevention of entrance of contagions | 11 | 1 | 12 | 61 | 1 | 62 | 1 | 6 |
| 8. Control of contagions within camp | 186 | 21 | 207 | 208 | 34 | 242 | 25 | 24 |
| 9. Sunburn | 19 | 4 | 23 | 35 | 8 | 43 | 2 | 4 |
| 10. Greater bodily cleanliness | 38 | 2 | 40 | 80 | 8 | 88 | 5 | 9 |
| 11. Unknown | 240 | 38 | 278 | 184 | 43 | 227 | 33 | 23 |
| Total | 732 | 113 | 845 | 864 | 136 | 1000 | 100 | 99 |

Classification unknown in 151 cases.

The chief difference to be noted in the comparison of preventives between the long and short term camps is that the two classifications, "proper dietary standards" and "unknown" represent fifty per cent of the cases in the long term camp and thirty-four per cent in the short term group. As pointed out earlier a very large number of the preventives in the "unknown" group seem to center around the questions of fatigue and food but were not so unmistakably evident as to justify these classifications. As would be expected in camps where campers change rather continually a larger percentage of contagions are brought into short term camps from the outside than in the long term camps. Greater cleanliness seems to be needed somewhat more in the short term group.

*Summary: Health in Camps.*

1. There were more illnesses than accidents in the camps studied, the ratio being 1 illness to 53 camp weeks as compared to 1 accident to 74 weeks. Campers had more illnesses than staff members by about forty per cent and girls reported slightly more illnesses than boys. The time loss was one and one-half days in bed and three additional days of partial incapacitation per illness. Eighty-three persons were forced to leave the camps for home or hospital treatment.

2. There was a higher percentage of major contagions among girls, with influenza constituting seventy-five per cent of all contagions reported. Boys had more skin, eye and ear infections. Respiratory and digestive infections accounted for more than fifty per cent of the illnesses among both boys and girls.

3. Camps where campers averaged approximately two weeks in camp per person showed a decided increase in the illness frequency rate during the middle of the camping season, particularly the fifth week. Camps where the campers remained an average of more than six weeks each showed a steadily mounting illness frequency, reaching a peak during the seventh and eighth weeks of the season. The rate for the first six weeks was slightly higher than it was in the short term group and during the final three weeks the rate was twice as great in the short term group. This raised the question as to whether the factors other than seasonal influences might not be responsible for this increase. This increase was

to be found in eye and ear infections, respiratory infections and digestive upsets.

Two factors seemed to offer possible explanations of the increase of illness, increased exposure to infection or decreased ability to resist infection. An analysis of methods in use to control contagions showed that almost all camps were requiring some kind of health examinations by physicians before accepting campers and most camps gave an additional examination upon arrival in camp. Methods of supervising health in camps and of detecting and isolating contagions did not seem to be so well handled. Sanitary conditions seemed generally to meet the standards of State Health Inspectors.

In regard to the suggestion that resistance might be lowered towards the end of the season the factors which seemed most directly related to resistance were studied. First any decrease during the last part of the season would not seem to be a seasonal condition since the illness rate decreased in the short term camps in the last three weeks. This would say nothing concerning the possibility of some such seasonal influence during the middle of the season however. Other factors probably related are sleep, nutrition and overwork or strain, both physical and nervous. These were analyzed with the following results indicated as possibilities:

1. In the first place individuals vary in their needs as to food, sleep and rest. Life in most camps is so organized that little attention ordinarily is paid to the differing needs of individuals.
2. Many campers did not seem to be receiving the amount of sleep recommended by pediatricians.
3. In many cases standards of nutrition seemed to vary considerably from those set up by Rose and others.
4. There seemed to be a very great possibility that some campers tended to be exhausted by the strenuous program of camps.

If the above conditions should be true it seemed reasonable to suggest that a sufficient lowering of vitality and resistance might occur in some individuals to account for the rising illness rate.

# CHAPTER VII

## HEALTH CONDITIONS IN CAMPS—1930; GENERAL CONCLUSIONS FOR THE TWO YEARS

The procedure used to evaluate the reliability of the study of safety conditions will be used, also, with respect to the study of health conditions. This chapter, then, will be given over to an examination of the degree to which the conditions and conclusions stated in the preceding chapter are borne out by the data of 1930.

The following questions will be considered:

1. To what extent does the illness record for 1930 correspond to that of 1929?
2. To what extent do the factors which influenced health in 1929 operate in 1930? These would include:
    a. The factor of position in camp
    b. The factor of sex
    c. The factor of age
    d. The season
    e. The time spent in camp
3. To what extent are the conditions concerning sanitary standards, health supervision and program similar in 1930 to what they were in 1929?
4. To what extent are the same general problems indicated?

Finally, the general conclusions regarding health conditions in camps will be discussed, based on the evidence for the two years of the study.

We shall need first a comparison of the illnesses occurring in the two years together with the fatalities, the time loss resulting from the illnesses and the number of persons sent from camp. The following table gives the number of illnesses and the rate per thousand for each year separately and for the two years combined. The unit of one thousand individuals means, as in Chapter V, one thousand individuals in camp for a period of nine weeks each. This is the equivalent of nine thousand camp weeks, as previously explained.

TABLE XLII

THE ILLNESSES IN SUMMER CAMPS—1929-1930

| Illness | Number | | Rate per Thousand | | Totals | |
|---|---|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 | Number | Rate per Thousand |
| Contagious | 283 | 239 | 24 | 8 | 522 | 13 |
| Non-contagious | 83 | 210 | 7 | 7 | 293 | 7 |
| Nervous | 246 | 416 | 20 | 14 | 662 | 16 |
| Circulatory | 22 | 34 | 2 | 1 | 56 | 1 |
| Respiratory | 504 | 1,196 | 42 | 40 | 1,700 | 41 |
| Digestive | 425 | 1,449 | 35 | 48 | 1,874 | 46 |
| Genito-urinary | 14 | 58 | 1 | 2 | 72 | 2 |
| Skin | 222 | 472 | 18 | 17 | 694 | 17 |
| Bones | 33 | 87 | 3 | 3 | 120 | 3 |
| External | 119 | 140 | 10 | 5 | 259 | 6 |
| Unclassified | 40 | 336 | 3 | 11 | 376 | 9 |
| | 1,991 | 4,637 | 165 | 156 | 6,628 | 161 |

| | 1929 | 1930 |
|---|---|---|
| Fatalities: | | |
| Meningitis | 2 | 1 |
| Typhoid | 0 | 1 |
| Streptococcus infection | 0 | 1 |
| Loss of Time: | | |
| In bed | 3,083 | 4,716 |
| Rate per 1000 | 257 | 163 |
| Partial | 6,018 | 7,982 |
| Rate per 1000 | 502 | 275 |
| Sent Home: | | |
| Number | 83 | 577 |
| Rate per 1000 | 7 | 30 |

It is evident that the amount of illness for 1930 is almost the same as for 1929. Actually it was even more similar than the above table indicates since poison ivy infections were classified as an illness in 1930 and an accidental injury in 1929. Had this not been done the illness rate per thousand for 1929 would have been 162 instead of 165, making the difference even smaller.

There are changes in the rate of individual illnesses which are rather large. Chief of them is the difference in rate for contagious diseases, it dropping from twenty-four to eight per thousand. The following figures explain this change.

| Illness | Number | | Rate per Thousand | |
|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 |
| Influenza | 211 | 137 | 18 | 5 |
| All other contagions | 73 | 102 | 6 | 4 |

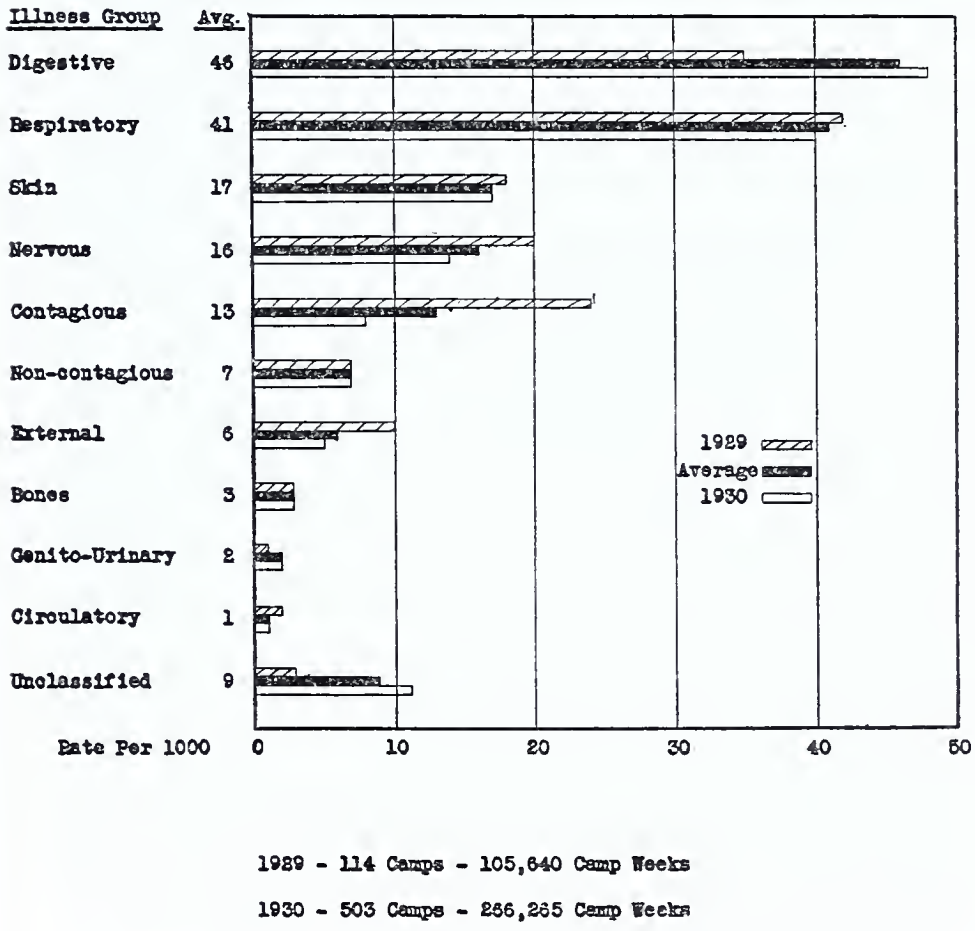
It is clear that the amount of contagions other than influenza remains fairly constant while the amount of influenza decreased greatly in 1930.

There are other shifts of some size. There were fewer eye and ear infections, more digestive illnesses and fewer illnesses classified under the heading "External" in 1930. The shift in this latter group is also caused by the change in the classification of poison ivy infections. There was also an increase of illnesses in the "Unclassified" group in 1930.

Respiratory and digestive illnesses continue to be the more common ones, these groups including forty-six (46%) per cent of all the reported illnesses in 1929 and fifty-six (56%) per cent of all reported in 1930.

FIGURE 9

ILLNESSES IN SUMMER CAMPS—1929-1930



The number of fatalities was slightly lower in 1930. This will be discussed later. The same situation with regard to the loss of time from illnesses is found as was present in the study of safety conditions. There is a sharp decline in the amount of time lost, both complete and partial, but this is offset by an equally sharp increase in the number of campers sent away from camp. This condition makes it impossible to say with accuracy whether the illnesses reported in 1930 were less serious than those of 1929.

A word should be said about the number of fatalities. The writer believes that the reported fatalities probably do not include all of those which actually occurred during the two seasons. When a camper becomes seriously ill it is customary to remove him to a nearby hospital. Most of the deaths will undoubtedly occur then after the patients have left the camp and there is no way of knowing whether all of these deaths were reported. An attempt was made to follow up each case where the patient was sent away from camp but this could not always be done.

There is another factor which cannot be omitted from this discussion with justice. Some of the more serious illnesses, and accidental injuries, may not have been reported. The writer knows definitely of one camp in 1929 which discontinued reporting when one camper contracted a serious illness and it seems reasonable to recognize the fact that others may have done this. If there is any discrepancy between illness and accident conditions as reported and as they actually existed the probabilities are that the reports represent something of an understatement of conditions. Every effort was made to prevent this and the various camping organizations gave a degree of cooperation which could scarcely have been hoped for. Furthermore the cooperation given by the individual camps was a constant source of equal surprise. Most of them had much to lose and very little to gain so that the degree of cooperation they gave to a group of whom they knew comparatively little is a rare tribute indeed to their interest in the improvement of the camping movement.

There were various epidemics of typhoid in camps in 1930, but only one occurred in a camp participating in the study. Several camps were quarantined for spinal meningitis.

*The Factors Influencing Health.*

In view of the degree of corroboration the data for 1930 gave to the conclusions of 1929 a detailed statement of the influence of position in camp and of sex on health will not be given. The data bore out in detail the conclusions as stated in the preceding chapter. Campers have more illnesses than staff members and the proportion of various illnesses is almost the same for each. Similarly boys and girls have approximately the same amount of illness with the same differences on the whole as found in 1929. In 1929 the rate of contagious diseases was higher for girls than boys while in 1930 they were approximately the same. Girls continue to have slightly more digestive illnesses, boys have more skin infections. The differences are hardly so marked in these respects as they were in 1929. Boys continue to have somewhat more eye and ear infections although, as pointed out above, the rate of frequency for these infections decreased.

The greater shift in illness frequencies than in accident frequencies is not difficult to understand. A few camps may have influenza epidemics, or a number of cases of mumps, or typhoid, and this fact may change the illness record for all camps quite materially. An epidemic of broken legs is much less likely to happen. Similarly while an entire camp may have an attack of ptomaine poisoning a similar outburst of sprained ankles would be an event of great rarity indeed. For this reason the writer feels the illness frequencies for the two years combined have a degree of reliability considerably greater than could have been secured by the 1929 study alone. For the same reason, however, we would expect greater variation in any one year in the illness conditions than in safety conditions.

It is the writer's conviction that, for all practical purposes, the combined record for the two years is as reliable as is needed. This would receive some confirmation from the degree of correspondence between the comparative illness frequencies between boys and girls and between campers and staff members for the two years.

In view of the lack of data in 1929 concerning the influence of age on camp illness it seems desirable to give the data on this point for 1930.

TABLE XLIII

THE INFLUENCE OF AGE ON CAMP ILLNESSES—1930

| Age | No. of Campers | No. of Illnesses | Rate per Thousand |
|---|---|---|---|
| Under 6 years | 200 | 11 | 53 |
| 6 years old | 217 | 16 | 74 |
| 7 years old | 417 | 28 | 67 |
| 8 years old | 970 | 76 | 78 |
| 9 years old | 2,086 | 172 | 82 |
| 10 years old | 4,433 | 345 | 78 |
| 11 years old | 5,892 | 381 | 64 |
| 12 years old | 11,131 | 826 | 74 |
| 13 years old | 11,225 | 760 | 68 |
| 14 years old | 9,545 | 663 | 69 |
| 15 years old | 7,868 | 437 | 56 |
| 16 years old | 5,507 | 249 | 45 |
| Over 16 years | 6,395 | 186 | 29 |
| Unknown | .... | 301 | .. |
| | | 4,451 | |

As in the case of accidents age seems to play a comparatively small role in camp health for the ages seven to fourteen, although there was a slight increase in illness rates for years 8, 9 and 10. Above the age of fourteen there is a progressive decrease in the illness rate. The rates given in the table are based on a sufficiently large number of cases to make their reliability rather high. The differences are unquestionably real for the upper ages whereas they become less reliable below the age of ten.

*Season and the Time Spent in Camp.*

The data for 1929 indicated that the middle of the camp season, around August 1, is the time of the greatest number of illnesses for camps generally. This was particularly marked for the short term camp where campers tended to stay only short periods of time. More reliable information was desired as to this point and a slightly different technique for determining it was used. The method used is to compute the rate of illness per thousand for each week from June 14 to September 7. In the table below the weekly rates are quoted and in addition they are combined by two week periods. Combining two weeks tends to smooth out the minor irregularities and increases the reliability of the combined rate by doubling the number of cases on which it is based.

TABLE XLIV

THE ILLNESSES IN CAMPS FOR EACH CALENDAR WEEK

| Week ending | Total Persons in Camp | Number of Illnesses | Rate of Morbidity per 1000 | Rate by Two Week Periods |
|---|---|---|---|---|
| June 14 | 1,355 | 21 | 15.50 | |
| June 21 | 2,863 | 51 | 17.81 | 33.1 |
| June 28 | 7,085 | 108 | 15.24 | |
| July 5 | 19,108 | 277 | 14.50 | 31.3 |
| July 12 | 34,269 | 575 | 16.78 | |
| July 19 | 34,198 | 587 | 17.16 | 34.7 |
| July 26 | 34,200 | 599 | 17.51 | |
| Aug. 2 | 33,986 | 723 | 21.27 | 42.5 |
| Aug 9 | 28,548 | 607 | 21.26 | |
| Aug. 16 | 27,263 | 563 | 20.65 | 38.9 |
| Aug. 23 | 22,100 | 404 | 18.28 | |
| Aug. 30 | 13,054 | 255 | 19.53 | 35.4 |
| Sept. 7 | 1,324 | 21 | 15.86 | |
| Not given | 6,912 | 321 | 46.44 | |
| | 266,265 | 5,112 | 19.20 | |

The seasonal peak indicated in 1929 would seem to be confirmed. Using the formula for determining the reliability of the ratios used in the preceding chapter[1] we find the difference in rate between the third and fourth and the fifth and sixth week is .4% with the sigma of the difference being .045%. The difference is undoubtedly reliable—as to whether it is important will depend on the interpretation of the reader.

The highest point of illness frequency is again found around August 1.

We need to determine now whether or not the rate of illness increases the longer individuals remain in camp. It is not feasible to compare the records of the long and short term group in view of the fact that most of the camps cooperating in 1930 are short term camps. We have a more reliable index, furthermore, in the rate of frequency per thousand as the season progresses. This is given by the following table.

[1] Page 63.

TABLE XLV

CAMP ILLNESSES, CLASSIFIED BY THE LENGTH OF TIME IN CAMP PRECEDING THE ILLNESS

| Campers staying | Number Persons | Number Illnesses in the Group | Rate per Thousand Persons |
|---|---|---|---|
| One week or less | 117,814 | 1,671 | 14.2 |
| Over 1 to 2 weeks | 87,055 | 1,025 | 11.8 |
| Over 2 to 3 weeks | 28,667 | 460 | 16.0 |
| Over 3 to 4 weeks | 22,309 | 263 | 11.8 |
| Over 4 to 5 weeks | 13,278 | 233 | 17.5 |
| Over 5 to 6 weeks | 11,620 | 173 | 14.9 |
| Over 6 to 7 weeks | 9,005 | 77 | 8.6 |
| Over 7 to 8 weeks | 8,473 | 108 | 12.7 |
| Over 8 to 9 weeks | 3,680 | 21 | 5.7 |
| Over 9 weeks | 315 | 4 | 12.7 |
| Unknown | ..... | 416 | .... |
| | | 4,451 | 14.7 |

The most striking characteristic of the above table is the degree to which it resembles the preceding one. To understand the meaning of the two of them the following conditions should be noted. First, the high point of illness frequency by the calendar comes around August 1. Second, the high point of illness frequency among campers is found in the group which had been in camp five or six weeks before they became ill. These two periods tend to coincide for the following reason. If a camper comes to camp at or around July 1, as most long term campers do, the fifth or sixth week of his stay in the camp comes just after August 1, or at about the time of the seasonal peak of illnesses. This condition makes it impossible to determine whether the peak illnesses in the fifth and sixth week of a camper's stay is influenced primarily by season or by conditions within the camp, that is by the life of the camp.

One other significant point should be noted in connection with the data presented. There is a sharp decrease in the illness rate after the sixth week in camp. It is true there is also a decrease in illness rate by calendar week after August 1 but this calendar decrease is not nearly as large as the other. It seems extremely unlikely that the amount of the decrease after the sixth week is due to seasonal influences primarily.

This condition varies considerably from that previously found. In 1929 illnesses increased with the length of stay in camp. In 1930

staying in camp had little influence one way or the other until after the sixth week. The peak of illness frequencies did occur during the fifth and sixth weeks but this increase was not great enough to have any large significance. After the sixth week there was a marked decline in illness frequencies, this decline having a high degree of statistical reliability. This would denote a great improvement over the conditions found in 1929.

There are four factors which may have accounted for this change.

1. The sampling of camps studied may have been a factor in the change and to a certain extent the writer believes it was. It is true that several of the camps having the poorest record in 1929 did not participate in the study in 1930. Similarly those camps which did have the best records tended to continue with the study. The similarity of the data, however, indicates that the factor of sampling was probably not a large one. The fact that a somewhat different group of camps was studied may also be a factor but again the similarity of the data suggests that this is not probable.

2. The reporting may have been done more carefully and completely in 1929. Since the reports were easier to handle in 1930 the writer hardly believes this is true, and, furthermore, more following up of delinquent camps was done in 1930. The writer feels again that this factor does not seem important.

3. Health conditions outside the camps may have differed, and also weather conditions and general illness conditions outside of camps. Complete data for the entire nation on these points is not now available but such evidence as there is does not bear out this explanation to any great extent. 1930 was much dryer in most sections but it is impossible to say just what influence this had upon health. The chief difference evident is in connection with influenza. Had influenza been as prevalent in August of 1930 as it was in 1929, the rate of illness frequency for camps would probably have been influenced somewhat.

4. There may have been an improvement in conditions within the camps. The writer addressed many groups of Camp Directors during the spring of 1930, stressing in each case this question of a rising illness rate and discussing the factors which seemed to be influencing it. The 1929 data were given wide publicity by most

of the larger camping organizations so that a considerable percentage of the cooperating camp directors knew of the condition previously discovered. If the factors discussed were the factors actually influencing or causing this condition it does not seem unreasonable to assume that some improvements may have been accomplished. If so this would seem to be the more probable reason for differences found.

The following quotation from a letter written to its National Headquarters by one of the participating camps illustrates this point. The letter has reference to the present study, the results of which for 1929 had been put in the hands of the camp directors of this particular organization:

> "After studying the results of the previous year and finding that our first three weeks of camp in 1930 showed the same increasing tendency in illness and accidents we deliberately took on the task of lowering the ratio and succeeded in that our camp score never showed an increase over the third week score. That is, instead of constantly mounting lists of illnesses and accidents we went through a year with the score in both the places reached in the third week of our camping season. It did mean deliberately having an extra hour of sleep. It did mean increasing the milk diet measurably and the cutting out of competition in aquatics and things of that sort. The results, however, were very excellent."

This represents the point of view of one camp only but similar measures are known to have been adopted in other camps. It is the writer's opinion that such changes, to a smaller degree perhaps, were being made in a great many camps.

A restatement of the techniques used for arriving at the generalizations may throw some light on the meaning of the data. The technique used in 1929 was to total the weekly illnesses for short term camps to determine whether or not seasonal, climatic factors were having an influence on camp health. This totaling of the data for short term camps, both good and bad, gave an average figure. For the three week periods during the nine weeks of the camping season we found illness rates of 34, 63 and 44 illnesses per 1,000 campers for each three weeks. When we studied the records for the camps where campers remained throughout the season the illness frequencies per 1,000 campers for each three week period were 47, 70 and 84 respectively. The difference could not be one

of season or climate since any influence here would operate on both groups alike. The one differing factor was that campers remained in camp for a short period only in the first group while they stayed for a number of weeks in the second group.

It was impossible to use the same technique in 1930 but the more accurate method of comparing illness frequencies for each week was used. In 1930 the camp period tended to divide into four two week divisions rather than into three three week periods as in 1929. The illness frequencies per 1000 for the four two week periods were 26 — 28 — 32 — 21. If expressed in terms of three week periods, as used in 1929, the frequencies would be 39 — 42 — 48 — 32. These figures are comparable directly with those given in the preceding paragraph.

This is obviously, as stated above, a great improvement over the 1929 conditions but the illness rate still increases for the first six weeks campers remain in camp. After this they seem to make a more satisfactory adjustment to the life in camp and health conditions improve markedly thereafter.

One additional point should be kept in mind. There is no such thing as an average condition for the camping movement. We can average figures but a camp remains an individual; so that in reality we should study individual camps instead of averages. This is the condition when we consider individual camps. In both years there were some camps whose health records were excellent—there were others in both 1929 and 1930 where illnesses mounted steadily the longer campers stayed in them. In 1930 there were more of the better camps than in 1929, but both the good and the not so good still exist.

*Organization Differences.*

In this connection it is enlightening to note briefly the differences in health conditions which exist between the various large camping organizations. As heretofore the identity of the organizations will be concealed but the extent of the differences which do exist should be pointed out. The writer knows no other way to point out so graphically the influence of conditions within the camp on the health of campers.

The camps of eleven organizations were included in the 1930 study. Nine of them had sufficiently large numbers to give some

reliability to their rates of illness. (The Government Extension Camps were sufficiently unlike the others in age range, organization and program to make them a rather special group and they are not included in this comparison.) Among the nine we find rates of illness frequency ranging from 269 per thousand camp weeks to 96. The rates for the organizations were as follows:

| | Rate of illness per thousand |
|---|---|
| Organization 1 | 269 |
| Organization 2 | 263 |
| Organization 3 | 231 |
| Organization 4 | 214 |
| Organization 5 | 184 |
| Organization 6 | 154 |
| Organization 7 | 138 |
| Organization 8 | 132 |
| Organization 9 | 96 |

(It should be noted that the arrangements of organizations in the above rank has nothing whatever to do with alphabetical arrangement of organization names. It is based on illness rate alone.)

The camps of each organization have a wide geographical distribution and any seasonal or geographic influences affecting one would affect others also. The only factors which would seem to be operative to account for the differences are conditions within the camps themselves. These differences, however, it should be noted, are differences of population selected as well as differences in administration and program.

One additional point should be noted in connection with the above differences. The differences within organizations were as great as the differences between organizations. Conditions in no one group of camps are sufficiently good, nor are they uniformly bad enough in any other group, to give much prediction of the health conditions of any one camp. Every camp must be studied on its own record and for its own conditions rather than for the record and the conditions of its organization. The rates stated do indicate, beyond reasonable question, that real organization differences do exist, however.

*Factors Within the Camp Influencing Health.*

The statement was made in the preceding chapter that the incidence of illness in groups depends on two factors. It depends first on the exposure to infections which the group meets, second it depends on the ability or capacity of the group to withstand or resist the infection. In some cases immunizations are the only satisfactory methods of building capacity to resist an infection, as in the case of smallpox, for example. Other infections may be successfully withstood if the body is sufficiently healthy. Colds may possibly be an illustration of this, since persons who are fatigued, "run down," are supposedly more susceptible to colds than persons at a higher level of health.

If the above statement is accurate the health conditions within a camp would be influenced in a very great measure by the way they handle the two problems; one that of preventing the entrance of contagions and infections and the other that of building vitality and health. The conclusion was drawn from the summary and analysis of conditions affecting the two problems that camps were handling these factors in such a way as to justify the health conditions found in 1929.

In the summer of 1930 the writer visited approximately eleven (11%) per cent of the camps participating in the study, fifty-six in all, for two reasons. The first reason was to establish some sort of controls as to the accuracy of the data reported. It was possible, for example, to compare the amounts of sleep scheduled and the amounts actually given, to see the type of health supervision given, to find out the training of dieticians and health officers and various other items. In the second place it was highly desirable to get some information concerning factors which could not be gotten through reports. These would include such items as the amount of competitive activities, the attention to behavior problems, the whole question of discipline and social controls, and the general sanitary conditions. These various factors influencing camp health will be considered individually.

1. *The Prevention of the Entrance of Contagions.*

A. *Pre-Camp Examination.*

The conditions reported in the preceding chapter would seem to be borne out in detail by the extension of the study. Most camps

give some kind of a pre-camp examination but on the whole they tend to be rather superficial. Less than half of the camps, however, require physical examinations of their staff members. Ten per cent of the camps require no examinations at all. The figures are:

| Pre-Camp Examinations | Number | Per Cent |
|---|---|---|
| Camps requiring examination of campers | 299 | 89 |
| Camps requiring examination of staff members | 142 | 43 |
| Camps requiring no examinations | 36 | 11 |
| | 335 | |

B. *Examinations at Camp.*

In respect to the giving of examinations in the camp there was some difference. The figures for the two years are as follows:

| Examinations in the Camp | Number | | Per Cent | |
|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 |
| Day of arrival | 34 | 171 | 26 | 51 |
| First week | 93 | 49 | 71 | 15 |
| None given | 4 | 115 | 3 | 34 |
| | 131 | 335 | 100 | 100 |

C. *Examination of Food Handlers.*

The persons in camp who are the greatest hazard from the standpoint of health are the food handlers. This should be evident and yet only a comparatively small proportion of camp directors are sufficiently aware of or impressed by this fact to safeguard themselves against this source of danger. The condition among camps is very similar for the two years as shown below.

| Food Handlers Examinations | Number | | Per Cent | |
|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 |
| Complete examination with urine and stool analysis | 31 | 62 | 22 | 19 |
| Physical examination only | 61 | 142 | 43 | 43 |
| No examination of any kind | 49 | 131 | 35 | 37 |
| | 141 | 335 | | |

The number of camps that pay no attention to the health of food handlers is still large.

D. *Supervision of Drinking and Swimming Water.*

Present standards and practices are particularly inadequate in this particular. Conditions relating to the analysis of drinking and swimming water are similar to those in 1929. A comparatively small number of camps still use water that is untested, some thirty-five per cent use water tested once during or before the season; some sixty per cent use water that is subjected to more than one analysis. A comparatively small number of camps have similar analyses made of the water in their swimming areas.

E. *Medical Supervision Provided.*

No data were available in 1929 concerning the medical supervision. This has been secured for 1930 and the results are given herewith.

| Resident Medical Supervisor | Number | Per Cent |
|---|---|---|
| Physician | 52 | 15 |
| Medical student | 82 | 24 |
| Registered Nurse | 102 | 30 |
| Practical Nurse or First Aid student | 90 | 27 |
| None | 9 | 3 |
| | 335 | |

Twice as many camps have relatively untrained men and women supervising health as have physicians. This applies to health officers within the camp, it should be noted, and takes no account of camps with arrangements with physicians living in near by villages or cities.

F. *Supervision of Milk Supplies.*

A larger percentage of camps used raw milk in 1930 than in 1929. The following are the figures relating to this.

| Milk Used | Number | | Per Cent | |
|---|---|---|---|---|
| | 1929 | 1930 | 1929 | 1930 |
| Pasteurized | 91 | 182 | 65 | 54 |
| Certified | 38 | 37 | 27 | 11 |
| Raw, untested | 12 | 104 | 8 | 30 |
| Canned | .. | 12 | 0 | 4 |
| | 141 | 335 | | |

It should be recognized that the fact that milk is pasteurized is no guarantee that it will reach the camper in a sterile condition. The process of pasteurization means only that the development of harmful bacteria is very greatly impeded and it offers no guarantee that milk may not be infected again after pasteurization. It is as necessary that extreme cleanliness be observed in the handling of pasteurized milk as in the case of raw milk.

2. *The Building of Health.*

All of the above factors may be well handled in camps without the level of general health of campers being raised for there are other factors which influence health and vitality directly. In the preceding chapter the standard of nutrition, the amount of sleep, the amount of fatigue and exercise, the amount of worry were all mentioned as influencing health in a very direct and immediate fashion.

Conditions with respect to these factors were studied and reported previously, but the verification of the statement of these conditions was felt to be among the most important reasons for the continuation of the study. It was the chief reason for the writer's visits to a sampling of the camps.

The extension of the study bore out in detail the conditions described in Chapter VI but will be discussed individually.

A. *Sleep in Camps.*

Conditions as to sleep in camps were summarized as follows on page 82:

> "It seems then to be true unquestionably that many campers do not receive as much sleep as is recommended. In many cases the loss is probably very severe, sometimes amounting to as much as two hours per day."

The study showed an average actual sleeping time of perhaps nine hours per night for the camps visited.

The continuation of the study shows almost exactly the same conditions. Making the allowance for the discrepancy between scheduled sleep and actual sleep indicated in the preceding chapter, the following are the data for the camps participating in the study.

TABLE XLVI

SLEEP IN CAMPS—1930

| Actual sleep per night | Number of camps | Per Cent |
|---|---|---|
| 7½ hours | 10 | 3 |
| 8 hours | 14 | 4 |
| 8½ hours | 98 | 29 |
| 9 hours | 87 | 26 |
| 9½ hours | 76 | 23 |
| 10 hours | 10 | 3 |
| Over 10 hours or adjusted to age | 42 | 12 |
| | 335 | 100 |

It is again evident that a large percentage of camps do not provide for their campers as much sleep as child specialists suggest they need. In this connection the question of qualitative differences in sleep should again be noted. If such differences do exist, as seems generally accepted, then certainly a considerable part of the sleep in camps may be of comparatively low value. Children have to learn to sleep in bunks, they have to learn to sleep out of doors, conditions immediately preceding the time for sleep are often far from conducive to rapid and sound sleep, many children probably sleep cold at times. In addition the life in camp is such that a rather large amount of sleep would seem to be needed. All of these conditions make a large amount of sleep even more desirable and make the discrepancy between actual and desired conditions even more noticeable.

B. *Nutrition in Camps.*

Standards of nutrition in camps may be inadequate in a variety of ways. First, insufficient food may be given. Second, the caloric quantities may be given but needed kinds of foods may be omitted from the dietary. Third, the food given may be so cooked that much of its value is lost. Fourth, all of the above may be properly handled and yet if children eat when they are badly fatigued, if the food be bolted, the situation may still be highly undesirable. In any study of standards of nutrition in camps it is the writer's opinion that each of the four factors named above, and perhaps others, should be considered.

Unfortunately strictly objective data on these points could not be secured but an indirect attack on the problem seemed possible

by the following means. First, a study was made of the title of the person responsible for the Commissary and for nutrition in the camp. The weakness of securing titles only will be considered in the following paragraph. Second, a study was made of the amount of money allowed for food exclusive of the cost of preparation and service. Third, a study was made of the caloric quantities of food served in those camps where accurate measures of this were maintained.

The following are the conditions:

1. *The Supervision of Nutrition.*

Camps are coming to use consulting and resident dieticians to a considerable extent but the significance of this fact is somewhat offset by the free and unscientific use of the term dietician. As far as the writer can tell there is no arbitrary dividing line between a person who has qualified as a dietician and one who has not yet achieved this. Even so the meaning of the term seems unduly spread when a young girl is considered a dietician as a result of one High School course in Home Economics. This was the qualification of the dietician, so-called, in one of the camps visited. It is rather common to refer to women with some experience in feeding their own families as dieticians even though they have had no technical training.

It is not the desire of the writer to question the knowledge of such non-technical persons, nor to raise the question of the technical use of the term dietician. It is necessary, however, that we take into consideration the almost meaningless way in which the term is used in camp practice.

In this one point the writer's observation differed somewhat from the reported practice so that both the observations and the reports from the camps will be given. On the other points there was a very high degree of similarity between the observations and the reports of practice by the camps themselves.

| Menu made by | Number camps as reported | Per Cent | Writer's observation in 56 camps Per cents |
|---|---|---|---|
| Dietician in camp | 111 | 33 | 23 |
| Consulting dietician | 71 | 21 | 18 |
| Director | 108 | 32 | 48 |
| Others | 45 | 13 | 11 |
| | 335 | | |

The discrepancy in the figures given by the camps and those gathered by the writer personally are not particularly large but one point should be noted in connection with them. The camps visited by the writer tended to be the larger, the better known and the longer established camps. If dieticians were used in only forty-one per cent of this group of camps there is hardly room to doubt that for the entire group of camps studied the percentage would be much lower. Even this percentage then, rather than the fifty-four as reported, is probably too high.

Still another question must be raised, that of the value of consulting dieticians. The term means that a camp has on file for the chef's use a menu prepared by some outside dietician or individual. Camp conditions vary so much that the better trained dieticians with whom the writer has talked feel that a prepared in advance menu is of comparatively small importance. Whether it be of value ideally the writer is not prepared to say—it would seem that a trained person should be able to plan meals more wisely than an untrained one. It is of value, however, only where the chef is able and willing to carry out the plans of the dietician, and the degree of reverence ordinary cooks have for printed menus does have some limit, in the writer's experience. Two of the camps visited were using menus prepared by the same outside dietician. The writer felt that the food in one of these camps was the most plentiful and the best prepared he had found at that time. In the second camp where the same menu was being used he was unable to eat the food served. The food was poorly cooked, greasy, cold. It was served in a fly-filled dining-room. Knives, forks and plates were greasy and dirty from previous meals. The oilcloth on the table had been cleaned but, unfortunately, not during that calendar week. The menus were the same, however. Even a casual visit to a comparatively few camps will establish one point to any reasonably competent observer. There is no substitute for care and competence on the part of those actually supervising the preparation of food for children.

2. *The Amount Spent for Camp Food.*

Even the best of dieticians must have money to spend or food cannot be secured. The accuracy of figures reported for this item is doubtless open to some question but they are indicative of the

possibilities and probabilities. The following food allotments were reported:

TABLE XLVII

THE AMOUNTS CAMPS SPEND FOR FOOD—1930

| Food Cost per Day—Exclusive of Preparation and Service | Number | Per Cent |
|---|---|---|
| Less than 40c | 26 | 14 |
| 40c to 50c | 50 | 27 |
| 51c to 60c | 54 | 29 |
| 61c to 75c | 37 | 19 |
| Above 76c | 22 | 11 |
| | 189 | |

Combining the first two items it is seen that forty-one (41%) per cent of the reporting camps say that they spend fifty cents or less per person per day for raw food. Perhaps a camp can be well fed on this amount. Where fair markets are readily available there would seem to be little doubt of it, but there is even less doubt but that it is exceedingly difficult to do. Only the most expert knowledge and the most efficient management will make it possible. The writer spent two days in a camp which seemed to him to have achieved the highest degree of efficiency in its handling of nutrition of any camp he has seen. Their markets are exceptional, they have as expert supervision as is available and they have a wide background of accumulated experience. There are 200 persons in the camp, most of them boys from eight to fourteen. The cost of food exclusive of preparation and service is approximately forty-five (45c) cents per person per day. The food is excellent. The writer's experience in the camp corresponds with that of a majority of the staff members however. There was sufficient food to allay hunger perhaps but there certainly was no margin.

It is the writer's opinion that no other camp visited by him equals this camp in its handling of the problem of nutrition. If this is true it seems hardly possible to him that the average camp can be well fed on fifty cents per person per day. A sufficient quantity of food can be provided to maintain weight without question, but this quantity is secured by a serious overloading of the menu with inexpensive, starchy food, or else the campers supplement their food by purchases of candy and pastry from the camp canteen or other sources.

In addition to giving an insufficient amount of food for the necessary economy involved there is also the problem in many of the more expensive camps of overloading diets with rich and starchy food. A large segment of pie composed of two layers of crust, one layer of jam and one of whipped cream is hardly the dessert one would expect a trained dietician to provide for children as the last course of an already rich supper. This was done in two of the camps visited by the writer and in each case this was one of the favorite and regular desserts.

3. *The Quantity of Food Served.*

The average camp has little exact knowledge of the caloric quantity of food served. The exceptional camps where this was known was so rare that this measure could not be used.

*Conclusions.*

The conclusion would seem justified that in the average camp the campers probably secure a sufficient caloric quantity of food. They may do this, however, by eating large amounts of breads and inexpensive, starchy foods or they may secure it by augmenting the camp diet by purchases from the camp canteen, by boxes from home and other sources. (In general, it should be said in fairness, camps do exercise a rather close control of camper purchases of food.) The food that is provided is often poorly cooked, often unappetizingly served and, finally, may be bolted down by campers in a dining-room characterized by noise, tension and haste. The above statement is not true for most girls camps but would be a fair description of the average rather than the unusual boys camp. In addition the food is often poorly balanced and poorly adjusted to child needs. As stated before this is descriptive not of the unusual camp situation but of the ordinary situation. This being true, it seems ample justification for the conclusion that in a large percentage of camps the standards of nutrition probably make against rather than for abundant health.

C. *Fatigue in Camps.*

Accumulated fatigue is not the result of exercise, of the expenditure of energy, alone. It is, more accurately, the ratio between the expenditure of energy and the recuperation, the re-accumula-

tion, of it. The process of recuperation is comparatively rapid and constant under ordinary circumstances and provided we give the organism opportunity for it. If exercise is continuous and prolonged a deficit of energy may be the result, however, and the condition is described commonly as one of fatigue.[1] A study of fatigue in camps, then, must take into account not only the activity of programs but also the opportunity provided for recuperation.

There has been a somewhat general consensus of opinion that camp programs tend to be very active, perhaps too strenuous for ideal health conditions. The observation of the writer is completely in line with the opinion of other observers as to the amount of highly stimulated competitive activities. In a large portion of organized camps the activity of campers is limited only by the energy and ingenuity of program directors and counsellors. (The energy of these staff members would seem entirely adequate even though there are limits to the ingenuity observed.) The result is a rather continuous activity with a consequent drain on the energies of the camper. This burden could be carried by most campers if camps would provide opportunities for recuperation as energetically as they seek opportunities for the expending of energy.

The major failure of camps would seem to have to do primarily with this factor of the reaccumulation of energy. The process of recuperation would be stimulated and heightened by adequate nutrition, and this too often is not provided. It would be heightened by increased, or at least adequate, sleep, and again this is often missing. It would be heightened by rest periods in the camp program but all too often these exist in name only. There is no higher term of opprobrium in many camps than that of "bunk-warmer", the expression applied to campers found resting in their bunks as the name implies. Public opinion in camps tends to value activity—resting or sleeping during the day is not one of the more desirable social virtues.

The direct relationship between worry and fatigue seems to be generally accepted. If this is true camps are not conducive, in many cases, to recuperation of energy in this regard. A camp, it would seem on the surface, should be a place of rather happy-go-

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[1] It is probably unnecessary to remind the reader that this is not, and is not meant to be, a technical description of the physiological nature of fatigue.

lucky freedom and happiness and seeurity but this does not always exist in practice. For a young boy or girl to live in an atmosphere of continuous competition and tension may be conducive to a kind of excitement. It does not follow that it is conducive to a feeling of security, to a general physical and emotional relaxation. Physical tension, emotional excitement consume energy. They impede the process of recuperation and to the degree that they are present in a camp to that degree will there be, probably, an accumulation of fatigue.

In summing up, the conclusion would seem to be that life in camp is particularly conducive to the rather serious depletion of the energies of campers and to the consequent accumulation of fatigue. Furthermore the program of a typical camp offers considerable evidence that this depletion does occur in the case of many campers. It is heightened by poor nutrition and inadequate sleep and rest in many cases. If this is occurring to any large number of campers and in any large number of camps then any philosophy of camping which makes abundant health one of its aims must deplore this situation.

## SUMMARY OF FINDINGS

*Illness Conditions.*

General health conditions showed a marked similarity in 1929 and 1930. The illness frequencies were 165 and 156 per 1000 respectively, which means that approximately two illnesses per week would be expected in a camp of 100 persons. These are illnesses which confine individuals to bed for a few hours, at least. Some twenty-five (25%) per cent of these would be respiratory infections and twenty-nine (29%) per cent would be digestive disturbances and infections. Skin diseases, eye and ear infections and contagious diseases follow in order of frequency.

The more serious illnesses are the major contagions, including typhoid fever, meningitis, pneumonia and pleurisy. The greatest health problem the individual camp has to face, in many ways, is the control of contagious diseases. In the past two years outbreaks of typhoid fever, spinal meningitis, infantile paralysis and streptococcic infections occurred in several camps.

The factor of age seems to play a comparatively minor role in

camp health. There is a small increase in illnesses at the eight, nine and ten year levels and a more marked decline in the fifteen and above group. Only the latter is large enough to be significant.

There is a seasonal peak of illnesses around August 1st which is both real and reliable. This is small enough, however, to make its significance for practical purposes a matter of personal opinions.

The chief differences found in the two years had to do with the influence of staying in camp on illness conditions. In 1929 illnesses increased with the length of time in camp. In 1930 this increase was found for the first six weeks although it was smaller than in the preceding year. After six weeks, however, a most marked improvement in conditions was found.

*The Control of Contagions.*

A large proportion of camps require pre-camp physical examinations of campers and also give a rapid examination soon after their arrival in camp. The examinations of food handlers, and other employees, is very inadequately handled. The health supervision within the camps may be carried on by registered physicians, medical students, registered or practical nurses, first aid men or there may be no resident health supervisor even in name.

Some attempts are made as a rule to insure safe water supplies, by having one or more analyses of the drinking water made. Little attention is paid to water in the swimming areas. Over one-half of the camps report the use of Pasteurized milk.

*The Building of Health.*

There is a tendency to provide insufficient sleep for children in camp, the shortage being very serious in some camps.

Accurate data concerning standards of nutrition are very difficult to secure. Approximately one-half of the participating camps report the use of resident or trained dieticians but this fact gives almost no indication of the qualifications of these individuals. Food expenditures are so low in a considerable percentage of camps that it would seem very difficult to provide adequate nutrition on the money allowed. Dining room conditions may be undesirable at times.

Life tends to be rather tense and exhausting in camps where

strenuous, competitive programs of activity are provided. Such programs are found in many camps. Unless particular attention is paid to providing opportunities for rest excessive fatigue is likely to result. Many camps are aware of this danger and do make provision to safeguard against it. In others, however, the provisions are either inadequate or non-existent.

*Conclusions.*

The results of the study suggest at least three general conclusions which seem worthy of mention. First, merely living in a rural environment does not of itself guarantee health. Inadequate sanitation is dangerous in camp just as it is in the city. Similarly, insufficient rest, loss of sleep, inadequate nutrition take from vitality irrespective of geographic location. The road to health is no more royal in camp than out.

Second, all camps are not alike in respect to health conditions. They range from the very bad to the very good and every camp must be considered individually and for its own merits. It is not enough even to know the organization to which the camp belongs although there are great differences between organizations in this respect. In no camping organization, however, are conditions so uniformly good or so uniformly bad that individual camps can be judged on the basis of this affiliation alone.

Third, the excellent health conditions in some camps give any needed proof that life in camp may be exceedingly beneficial to campers. This statement is made lest some of the criticisms of specific conditions made in this report be interpreted as a criticism of camping as an institution.

The health problem resembles the safety problem in one very basic and important aspect. In safety we have the problem of conserving life without sacrificing adventure. The same situation is faced in connection with health. If we are too concerned about our safety we become timid. If we are too concerned about our health we become hypochrondiac. Camps exist, that is the better ones do, that children may find growth and happiness and life in them. Health is an integral part of all three but we cannot make it the only end in itself. By taking sufficient care of ourselves, by sufficiently regimenting our lives, many of us might live to be one hundred years old. If this regimentation must be too severe, how-

ever, it might not be worth the trouble. The desirable health program in a camp will attempt, then, to guard campers against infections and to build health and vitality but it will do these things without sacrificing too much of the adventure and of the joy of living which are also necessary.

Two illustrations will make the reason for the inclusion of the above paragraph more clear. About eleven o'cloek one night in the summer of 1928 a most remarkable display of the Aurora Borealis was visible in the Poeono Mountains in Pennsylvania. The writer had seen nothing to compare with it then and has not since. Most of the members of the staff of a camp there were on the lake in boats when this display was at its height and discontinued an informal staff meeting to watch the matehless panorama above them. The suggestion was made that the campers be awakened, also, and for a moment it seemed this might be done. The moment of indeeision passed quickly, however and the campers were not aroused. All of their lives to sleep—one hour to see the splendor above! They slept.

Again, in the summer of 1930 the writer was discussing evening canoeing with a camper in his third summer in the camp being visited. Finally the youngster said, "It must be fun. You know I've never been on the lake when the moon was shining. We have to go to bed too early." A veteran camper of twelve and never once on a moonlit lake! In the name of health he had slept, instead.

In eamp life there are means and there are ends and we must be wise in distinguishing between them. Even health is no exception.

# CHAPTER VIII

## GENERAL SUMMARY OF PROBLEMS AND POSSIBLE REMEDIAL MEASURES

In the preceding chapters the data seemed to indicate several rather large and general problems in the fields of both safety and health. After the analysis of the various factors related to accidents and illnesses these general problems were stated in the summaries of the two preceding chapters. In the analyses, also, various remedial measures were suggested, some of which lent themselves to classification. Inasmuch as the problems and these remedial measures are more or less scattered throughout the study it seems desirable to restate and group them. This chapter constitutes this restatement and grouping.

The term remedial measures is not always well adapted to the material but no more satisfactory term could be found and it is, accordingly, used throughout the chapter. In each case these measures are put forward as suggestions of possible methods of meeting the problems. They were developed either by classifying the preventive measures suggested by the reporters in the camps, or by taking over regulations and suggestions of Boards of Health and similar expert opinion. It will be evident that many of the suggested measures indicate the need for additional study.

*Problems in the Field of Safety.*

1. The first problem is to remove the chief accident hazards arising from undesirable physical conditions around the property and equipment. Attention will center chiefly around:

   a. Construction and maintenance of buildings and general equipment.
   b. Main pathways.
   c. Swimming area, particularly policing of beaches.
   d. Athletic and play fields.
   e. Insect eradication.
   f. Poison ivy eradication.

2. The second problem is to provide campers with sufficient education and supervision to enable them to meet safely the experiences

the life of the camp provides. Specific activities requiring particular attention include:

a. Swimming.
b. Boating and canoeing.
c. Woodcraft and the use of knives and axes.
d. Hiking.
e. Riding.
f. Archery and rifle shooting.
g. The care of minor wounds and infections.

*Remedial Measures in the Field of Safety.*

1. The first remedial measures center around the elimination of hazards arising from physical conditions within the camp. They would seem to be as follows:

A. Develop specific codes or standards covering the selection, layout and maintenance of camp grounds. This could be done in as much or as little detail as desired.

B. Develop standards to cover the construction and maintenance of such equipment as:

   a. Sleeping quarters.
   b. Kitchens and dining-rooms.
   c. Craft and other activity buildings.
   d. Boats and canoes.
   e. Athletic fields and equipment.

C. Develop a system of safety surveys to be conducted at stated intervals so that a continuous supervision of properties and equipment may be secured.

2. The second group of remedial measures center around the problem of education for and supervision of the more hazardous camp activities. In some cases considerable additional study may be necessary before the recommendations can be carried out. Standards or codes should be developed to cover education for and supervision of:

a. Aquatic activities, particularly swimming. In this particular standards are already available which may be adequate.
b. Boating and canoeing.

c. Hiking and woodcraft activities. There would seem to be a need for the training of counsellors for these activities as well as the development of standards for the activity.

d. Archery and rifle shooting.

e. Horse back riding.

*Problems in the Field of Health in Camps.*

For practical purposes the problems in the field of health in camps can be treated under two general headings; first, the reduction of exposure to infection; second, the increasing of resistance to infection. Health standards for camps, then, must look towards the solution of and grow out of the methods of meeting these two general problems.

1. *The reduction of the exposure to infection.* These infections center around the major contagions, eye and ear infections, respiratory, digestive and skin infections. The methods by which these infections are spread will be considered in detail.

   A. Infections may be spread by persons, which includes persons bringing infections into the camp with them when they arrive, or persons who develop them in camp. The following remedial measures were suggested or are now being practiced.

      1. Every camper or staff member should have a complete physical examination by a registered physician before coming to camp. Certificate indicating the results of this examination should be in the hands of the camp health officer before the arrival of the individual. Standards should be developed covering those individuals who should be refused admittance to camp. It should be mentioned in this connection that it may be desirable to develop examination report forms.

      2. There should be a stripped examination upon the day of arrival in camp which should enable health officers to detect skin or respiratory infections which the physician might have missed or which might have developed after the examination.

      3. All food handlers, in addition to the above examinations, should have a urine and stool analysis.

      4. There should be a continuous campaign of education with parents and visitors concerning the danger of camp visitors and the protection they owe to the camp.

5. Health conditions of districts to be visited by hikers should be ascertained in advance and care taken to avoid needless exposure on such trips.

6. There should be a continuous program of health supervision within the camp so that any developing infections may be detected at the earliest possible time. The following methods have been suggested or are now in use.

   a. The taking of daily temperatures for a part or all of the camp season.

   b. Daily personal inspection of all campers by the health officer.

   c. Daily inspection of campers by staff members with a report to health officer where his attention is needed. Where this method is used staff members may need specific instruction as to the points they should observe.

   d. A time set aside for campers to report any indisposition to the health officer.

7. Facilities should be provided for the isolation of all cases of suspected contagions, or for the removal of such from camp.

8. The use of common drinking cups, common towels and the exchange of articles of clothing should be prohibited.

B. Infections may be spread or caused by water, milk and other food supplies. The following remedial measures were suggested or are now being practiced.

1. A sanitary survey by a recognized expert should be made to determine sources of supply and possible sources of contamination for water used for drinking and swimming purposes.

2. There should be periodic laboratory analysis of both drinking and swimming water. The intervals between analyses might be specified. The camp should assume the responsibility for sending samples of water to State laboratories which should conduct the analyses.

3. Pasteurized milk only should be used, this to be supplied by dairies under Board of Health supervision and whose employees have been subjected to the same examinations as have the food handlers in the camp.

4. There should be adequate refrigeration to safeguard milk, meat and other perishable foods for a reasonable length of time. Standards to cover the temperature to be maintained may be desirable.

5. Kitchens and dining-rooms should be adequately screened against flies and other insects where necessary.

6. Drinking water should be distributed over the camps by some approved, sanitary system. The use of common drinking cups should be prohibited.

C. Infections may be spread or brought about by inadequate systems of sanitation. The following practices have been suggested or are now in use.

1. Fly-tight, approved methods of sewage disposal should be installed. Detailed specifications to cover this may be set up or the standards of the various state Boards of Health may be accepted. If specifications are to be set up they should consider the size, construction and maintenance of the latrines as well as the methods of the sewage disposal.

2. Fly-tight, approved methods of storing garbage and of its disposal should be installed. Detailed specifications to cover this could be set up.

3. There should be adequate drainage for all parts of camp.

4. Buildings and particularly sleeping quarters should be exposed to direct sunlight for a considerable portion of the day.

5. Where possible wash houses should be constructed which would include:

a. Facilities for washing of hands and face.

b. Separate facilities for tooth washing.

c. Facilities for shower baths, preferable hot showers.

D. Infections may be fostered by some types of camp activities. This seems to be particularly true of infections of the membranes of the head. The following practices are suggested:

1. Excessive high diving or under water swimming should be discouraged or prohibited. The advisability of div-

ing boards ten feet or more above the water would seem open to serious question on this account.

2. Specific instructions should be given to all persons as to methods for clearing the head of water after swimming.

There are several items, as dietary standards, health habits, personal cleanliness, which can be considered either in the section dealing with the reduction of exposure to infection or in the section dealing with the building of vitality. It seems better to the writer to treat them in the latter section and they are, accordingly, deferred until then.

2. *The Building of Health in Camps.* In the discussion of this topic in Chapter VI it was recognized that there are doubtless a variety of factors which influence resistance to infection. There were three factors, however, nutritional status, exercise and nervous strain, and sleep which were assumed to be directly related and of great importance to the development of resistance. The data as to the way camps were handling the three factors were presented and several rather specific problems seemed to be suggested. The remedial measures which follow are based on the suggested measures in part but also it has seemed desirable to utilize some expert opinion and the available research in regard to the three factors mentioned. This has been done as will be evident from the measures suggested.

1. It is assumed that nutritional status bears on the problem of health in camps and this in turn depends on, or is influenced by, the dietary standards of the camp. The data indicate that this should be so interpreted as to include not only the placing of the proper amounts and kinds of foods before campers but also should consider the way this is received by the campers.

A. A standard of nutrition should be maintained which is sufficient to supply the bodily energy needed to care for normal growth. The standards set up by Rose as to amounts and balance of food were suggested and might be accepted or other specific standards might be determined.

B. Particular effort should be made to prepare camp foods well and to serve them in an appetizing manner.

C. An atmosphere in the dining-room should be established which discourages bolting of food and encour-

ages the eating of all kinds of food served. Specific and definite eating problems of individuals should be given special attention where such seems to be required.

D. There should be sufficient education or regulation to supervise the additional sources of food which campers may receive. This consists usually of packages from parents or food purchased at the camp or other stores.

2. It is generally assumed that health habits influence illness and health. No specific study could be made as to present camp conditions as to this point but health standards would seem forced to recognize and include them. The following suggestions were recommended in the reports or are in use at present in some places.

   A. Most Directors feel that there should be some check on the habits of elimination of campers. The method of securing this check is commonly a daily report to counsellors or health officers. It is the writer's opinion that any such check as this should be accompanied by a very explicit system of education as to the need for this or the results may not be altogether satisfactory.

   B. There should be a daily soap bath, both from the standpoint of general cleanliness and also for the specific guarding against skin infections.

3. It is assumed that exercise bears on the problem of health and vitality, and with this is included rest. The following suggestions are taken from the reports or present practice.

   A. Programs of physical activity should be so controlled as to keep in mind the physical needs and limitations of the campers participating. If activities so strenuous as distance swimming, soccer, basketball, distance running or distance hikes are to be permitted and encouraged special provisions should be made to give the participants the additional rest and recuperation these activities require.

   B. All competitions should be so controlled that, because of them, individuals are not encouraged or permitted to continue activities after they have reached the point of fatigue.

   C. Long distance hikes represent an activity where physical strain, inadequate dietary standards and inadequate sleep and rest may reach a maximum. Without

questioning the educative values that may be inherent in the activity nevertheless such hikes should be carefully regulated according to the physical capacities of those who participate.

4. It was not possible to get measures of the nervous strain that may accumulate in camps nor were there adequate standards available for measuring the influence of such strain on health and resistance. It is the writer's opinion that, even though such measures are not available there is a strong possibility that such strain may exist and that it may influence health. These are the justifications for the inclusion of the following in the list of suggestions.

   A. The importance of the influence of social and emotional adjustments on child health should be recognized and every effort made to secure for each child such an adjustment to the life of the camp as will result in a feeling of security and happiness.

   B. Safeguards should be established to guard against the serious, nervous and emotional strain often developed in prolonged competitions of the type common in many camps.

5. It is assumed that sleep and rest influence health and vitality. The following suggestions are derived from the reports or the materials quoted in Chapter VI.

   A. Camp programs should be arranged which provide time for all campers to receive sufficient sleep. The standards quoted may be accepted or specific standards set up.

   B. There should be at least one rest period daily in addition to the sleeping period at which time every effort should be made to have all campers asleep or lying down in their bunks or elsewhere.

6. Programs should be so built as to make provision for meeting the differing and individual needs of campers as to sleep, rest and exercise, food and the like.

7. Weight when compared to some average standard seems to be an inadequate index of nutritional status and health. A loss of weight or a prolonged failure to increase weight on the part of adolescents would seem to merit attention and a search for causes. Weekly weight recordings for each camper are to be recommended if the above purpose is kept in mind.

Even a casual reading of the preceding pages will show that some of the suggestions made are quite definite and specific and lend themselves to codification in the form of legislation or similar standards, as the suggestion of periodic laboratory analysis of water supplies. Others might eventually be so treated but need additional study. Still others, the desirability for adequate social and emotional adjustments for campers, as an example, do not seem adapted to such codification. There would seem to be items so specific and so desirable that they might be required by law for all camps, while there are others which must have a very different sort of treatment.

# CHAPTER IX

## STATE SUPERVISION OF SAFETY AND HEALTH IN CAMPS

There are three groups of organizations working towards the establishment of standards of safety and health in camps. The first group are the national camping organizations themselves, each of which is interested primarily in its own camps. The second are the semi-private organizations of which the American Red Cross is an example. The third group are the various State Boards of Health. The work of these groups will be discussed in this chapter.

The work of the camping organizations is primarily educational and advisory in nature and as such most of the organizations lack the authority to compel action even should this be desirable. For this reason many people have felt that the chief progress in the camping movement will come about through legislative or other legal action on the part of states and the State Boards of Health themselves. To appraise the relative possibilities and the desirable functions of each method of control it is necessary to determine something of the status of State control. This involves a study of the methods of control and of the content of the regulations.

A study of the regulations in force in the various states shows there are three methods of control commonly used. In the first place a state may exercise control by requiring that desirable conditions be established before the camp is permitted to accept campers. Where this plan is followed the customary practice is to require that the Board of Health be notified in advance by any persons planning to operate a camp. After this notification a representative of the State or local Board of Health will visit the camp to determine whether or not the various requirements laid down by the Board have been satisfied. If these have been permission is then given to open and operate the camp. Most states using this plan have a system of licensure, similar to that in use with hotels or restaurants.

A second method is to exercise control by a system of rating camps, the ratings being made by representatives of the State or local Board of Health and posted or otherwise made known to the public. Where this system is used there may also be a set of

minimum standards to which all camps must conform in order to operate.

The third method, seemingly, is to provide no method. Under this system regulations are passed by State bodies and the enforcement is left, presumably, to local health officers in the district in which the camp is located. No system of licensure and no system of rating are provided.

It is evident that there are many desirable features about either the first or the second methods, or a combination of the two. At the same time there are certain very practical problems of such magnitude in connection with them that the discussion would be incomplete without mentioning them. In New York state, for example, there are perhaps 500 organized camps, a very large number of them opening within one week of July 1. Most of them can scarcely be inspected until near the time of their opening so that it is easy to see the impossibility of any State Board of Health making these inspections. It would require a very large force of trained inspectors who would have employment for a comparatively few days only. The alternative is to have the inspections made by local officers and the difficulties here are equally large. Many of the local inspectors are not particularly interested and some question might perhaps be raised as to their general level of competence for this particular job. This is particularly true where detailed rating schemes are used.

A second practical problem arises from the fact that many Boards of Health seem to make no distinction between tourist camps, public eating places and the organized camp. It is very common, therefore, to find blanket regulations which are supposed to apply to tourist camps, labor camps, public eating places, hotels and organized camps alike. The problems are obviously so different that any regulations drafted to cover all of these groups must be so general that they have little application to the organized camps.

There is no way to evaluate the success with which the various states are actually carrying out the regulations they have. The writer visited eleven rather well known camps in one state having far more regulations than the average and found that no one of the camps had seen a representative of the Board of Health during the current or the preceding season. Nevertheless this state requires all camps to be licensed—in theory. Perhaps the only generalization

justified is that in some sections and in some states Boards of Health may exercise very close supervision. Such supervision is not common however and we should recognize the extreme difficulty any state must meet in attempting to handle the problem.

*The Content of the Regulations.*

In the preceding chapter the problems in camp safety and health were summarized and suggestions were made as to the methods of handling them. In respect to safety the problems centered around the improvement of the physical conditions and the development of programs of safety education. In health the major problems had to do with the control of contagious diseases and the building of vitality. It is necessary to know something of the extent to which present legislation seems to be meeting these problems. They will be taken up individually.

First, Legislation and state regulation concerning maintenance of safe physical conditions simply does not exist. Unquestionably codes as detailed as desired could be set up to cover various parts of camp construction but to date this has not been done.

Second, there is an equal lack of regulation relating to safety education. Safety experience in other fields certainly offers little evidence for thinking that this could be covered by state regulation.

Third, there is considerable regulation of factors related to the control of contagious diseases. The following should be enumerated.

1. The more common requirements have to do with the disposal of sewage and garbage. In a few cases detailed specifications are listed but this is the exception.

2. Some attempt is made to control and safeguard supplies of drinking water, this safeguard consisting of a requirement that one or more analyses of the water be made.

3. Some attempts are made to safeguard milk supplies although these would not seem to be very successful as a rule. Similarly a few attempts have been made to insure adequate refrigeration but with even less success.

4. A very few states have regulations concerning pre-camp physical examinations for either campers or staff members or both. The writer has been unable to find instances of these being enforced.

5. A very few states have made some requirements concerning immunizations against contagious diseases.

6. A very few states require the reporting of cases of contagious diseases.

Fourth, there is practically no attempt to set up regulations covering the questions of sleep, diet, fatigue and the various factors which influence vitality and resistance. A few states make suggestions covering the selection of sites but it is doubtful whether these have any particular influence. Still a few others make some suggestions concerning dietary standards.

To summarize it is evident that although some things lend themselves to state regulation many of the factors affecting safety and health in camps are not subject to this type of control, the question of exercise, for example. Furthermore the difficulties attendant to the enforcement of even the few standards that do exist are very great. The conclusion would seem justified then that we have a long distance to travel before we are in a position to legislate health and safety into summer camps. This does not mean of course that we should not bend every effort to improve the machinery we do have nor that we should disregard, necessarily, the role of the State in the improvement of conditions. It does suggest however that, for some time to come at least, the chief responsibility for making camps safer and healthier must rest on the shoulders of the camping organizations themselves, and that primarily the problem is one of education rather than of legislation.

# VITA

Jewell Edward Sanders was born at Clinton, Arkansas, March 5, 1903. He received his elementary school education in the schools of that town and was graduated from the Morrilton, Arkansas, High School in 1919. He received his B. A. degree from Hendrix College, Conway, Arkansas, in 1923. His graduate work has all been taken in Teachers College, Columbia University. He received the M. A. degree in 1926.

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